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IAFOR Journal of Education: Studies in Education

Volume 9 – Issue 6 – 2021

Edited by Pearl Subban

Foreword

Dear Readers,

With the world continuing to experience enormous uncertainties brought by the coronavirus, the impact on our lives has been enormous. Education has experienced great and paradigm shifts, as the policies and practices that governed our schools and universities before COVID-19, have had to change. This has been an extremely challenging period for teachers and students alike, and yet periods of great forced change bring with them unexpected opportunities for growth and development, as the possibilities offered by online learning become apparent.

I would like to thank the authors, reviewers, and the IAFOR editorial team for their work on this exceptional issue, but most of all to the editor of this edition, Dr Pearl Subban of Monash University, Australia, who has worked so hard to bring this issue to completion.

The papers in this excellent volume, addressing the theme of "Sustainable Education for the Future", are a testament to the strength and range of the journal, that reflect the international, intercultural and interdisciplinary mission and strengths of IAFOR. Articles from authors from India, Malaysia, Japan, Saudi Arabia, Turkey, UK and the USA show that so many of the experiences we are living at the moment fall into the category of "different but same". As we struggle to make sense of what we are going through, both individually and collectively, it is clear that we have so much to learn from each other.

Happy Reading!

Joseph Haldane
Editor-in-Chief
IAFOR Journal of Education

Editorial Advice

Preparing a submission to the *IAFOR Journal of Education* is more than writing about your research study: it involves paying careful attention to our submission requirements. Different journals have different requirements in terms of format, structure and referencing style, among other things. There are also some common expectations between all journals such as the use of good academic language and lack of plagiarism. To assist you in reaching the review stage for this or any other peer-reviewed journal, we provide the following advice which you should check carefully and ensure that you adhere to.

1. Avoiding Plagiarism

Plagiarism is a practice that is not acceptable in any journal. Avoiding plagiarism is the cardinal rule of academic integrity because plagiarism, whether intentional or unintentional, is presenting someone else's work as your own. The *IAFOR Journal of Education* immediately rejects any submission with evidence of plagiarism.

There are three common forms of plagiarism, none of which are acceptable:

1. ***Plagiarism with no referencing***. This is copying the words from another source (article, book, website, etc.) without any form of referencing.
2. ***Plagiarism with incorrect referencing***. This involves using the words from another source and only putting the name of the author and/or date as a reference. Whilst not as grave as the plagiarism just mentioned, it is still not acceptable academic practice. Direct quoting requires quotation marks and a page number in the reference. This is best avoided by paraphrasing rather than copying.
3. ***Self-plagiarism***. It is not acceptable academic practice to use material that you have already had published (which includes in conference proceedings) in a new submission. You should not use your previously published words and you should not submit about the same data unless it is used in a completely new way.

2. Meeting the Journal Aims and Scope

Different journals have different aims and scope, and papers submitted should fit the specific journal. A "scattergun" approach (where you submit anywhere in the hope of being published) is not sound practice. Like in darts, your article needs to hit the journal's "bullseye", it needs to fit within the journal's interest area. For example, a submission that is about building bridges, will not be acceptable in a journal dedicated to education. Ensure that your paper is clearly about education.

3. Follow the Author Guidelines

Most journals will supply a template to be followed for formatting your paper. Often, there will also be a list of style requirements on the website (font, word length, title length, page layout, and referencing style, among other things). There may also be suggestions about the preferred structure of the paper. For the *IAFOR Journal of Education* these can all be found here: https://iafor.org/journal/iafor-journal-of-education/author-guidelines/

4. Use Academic Language

The *IAFOR Journal of Education* only accepts papers written in correct and fluent English at a high academic standard. Any use of another language (whether in the paper or the reference list) requires the inclusion of an English translation.

The style of expression must serve to articulate the complex ideas and concepts being presented, conveying explicit, coherent, unambiguous meaning to scholarly readers. Moreover, manuscripts must have a formal tone and quality, employing third-person rather than first-person standpoint (when feasible), placing emphasis on the research and not on unsubstantiated subjective impressions.

Contributors whose command of English is not at the level outlined above are responsible for having their manuscript corrected by a native-level, English-speaking academic prior to submitting their paper for publication.

5. Literature Reviews

Any paper should have reference to the corpus of **scholarly** literature on the topic. A review of the literature should:

- Predominantly be about contemporary literature (the last 5 years) unless you are discussing a seminal piece of work.
- Make explicit international connections for relevant ideas.
- Analyse published papers in the related field rather than describe them.
- Outline the gaps in the literature.
- Highlight your contribution to the field.

Referencing

Referencing is the main way to avoid allegations of plagiarism. The *IAFOR Journal of Education* uses the APA referencing style for both in-text citations and the reference list. If you are unsure of the correct use of APA please use the Purdue Online Writing Lab (Purdue OWL), – https://owl.english.purdue.edu/owl/resource/560/01/ – which has excellent examples of all forms of APA referencing. Please note APA is used for referencing not for the general format of the paper. Your reference list should be alphabetical by author surname and include DOIs whenever possible.

This short guide to getting published should assist you to move beyond the first editorial review. Failure to follow the guidelines will result in your paper being immediately rejected.

Good luck in your publishing endeavours,

Dr Yvonne Masters
Executive Editor, *IAFOR Journal of Education*

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From the Editor

The global pandemic irrevocably altered every facet of our lives, compelling us to rethink the way we function and communicate. For education, the online platforms became an essential tool to interact with our students, and to maintain a degree of normality when all else was thrown into uncertainty. Now, with the world emerging cautiously from government-imposed lockdowns and travel bans, students in both school and higher education are once again beginning the more traditional practice of education. But, should we simply transition into our previous formats? Perhaps it is time to pause, reflect and take stock of the lessons we can learn from this unusual time in our world's history. What can be salvaged, realised and understood from this time? It is in these lessons that we will gather details and data to sustain education in the future.

This issue adopts an appreciative lens, drawing together elements of education which could become the rungs of the ladder to lift us ahead. Undoubtedly, schooling during the pandemic revealed several inequities, exposing aspects of vulnerability and positioning others with privilege. It was overall a time of complexity and simplicity, and it is in this paradox that we find ourselves drawing out those pearls of wisdom. It was complex because of its heavy need on technology, the need for devices, an internet connection, and dedicated spaces to connect and engage electronically. It was simple because the home became a space of learning, parents became natural, surrogate teachers, and students began to engage with their learning in new and innovative ways. However, there were many points on this spectrum, which positioned some as fortunate, and others less so.

Importantly, it was a time to develop and draw on our internal reserves of resilience. Acquiring this resilience, is embedded in the words of former American President, Barack Obama, when he spoke of internalising excellence. As a race, humans are entrepreneurial, we strive to be and do better, competitiveness is built into us. It is this spirit that preserved us when the pressures of the pandemic became all too real and overwhelming. We preserved ourselves innately, sustaining our momentum as a people who remain essentially and deliberately, learners. In this issue of Studies in Education, we draw together ten articles, each referencing a different and varied aspect of educational resilience.

The issue coalesces around education in the contemporary age, focusing on the challenges and the joys of teaching and learning in the spectre of a global crisis.

In the first article "Online Higher Education: The Importance of Students' Epistemological Beliefs, Well-being, and Fun", Sujarwanto, Kieron Sheehy, Khofidotur Rofiah, and Budiyanto, present a mixed methods study which draws on both principal component analysis and thematic analysis to explore student's epistemological beliefs about online learning in higher education.

Somasundar M reflects in the second article "Perceived Discrimination and Students' Behavioural Changes: The Role of Cultural Background and Societal Influence" on how cultural background and societal influences could shape discriminatory beliefs about behaviour changes based on selected demographic variables.

In their article "The Effects of Learning Stations on Socioeconomically Disadvantaged Students' Achievement and Self-Regulated Learning", authors Reem Alsaadi and Adam Al Sultan investigate the effects of learning stations on developing academic achievement and self-regulated learning, among a group of Saudi Arabian students.

The fourth article, "Turkish Folk Music Lessons with Phenomenon-Based Learning: Preliminary Lessons and Results," a Turkish study by Meltem Çimen, focusing on the use of Turkish folk music, utilises phenomenon-based learning to reveal that pedagogically strong introductory activities are significant with regard to anchoring effective lessons.

In their article, "Effects of Gamified Learning on Students of Different Player Traits in Malaysia," Mageswaran Sanmugam, Anurita Selvarajoo and Jeya Amantha David reflect on the use of gamified learning, through a rumination on player traits, noting that positive changes could emerge to reshape education in the modern context.

The sixth article by Julia Tanabe "Sustaining Language Learning through Social Interaction at a Japanese National University" is a study looking into sustaining language learning through social interaction, demonstrating that characteristics like cooperation, interdependence and responsibility are fundamental in achieving education for sustainability.

In a critical discourse of religious representation in Indonesia "'Where am I?' A Critical Discourse Analysis of Religious Representation", Maretha Dellarosa observes that representing people accurately and appropriately in elementary school textbooks, aligns with social expectations and consolidates respect and dignity among communities of people.

The eighth article "No Campus Life for Us: Personal Reflections of First-year Students at a Malaysian University" zooms in on the effects of the pandemic on higher education. Ireena Nasiha Ibnu, Wan Hartini Wan Zainodin and Faizah Din, in their Malaysian-based study, consider the perceptions of first-year university students, who were compelled into online learning during the global pandemic. The study notes that students prefer more in-person interaction in order to sustain their learning.

The ninth article "Teacher's Working Condition and Hybrid Teaching Environment – A Narrative Case Study", by Neha Anand and Abbey Bachmann is a narrative inquiry into the lived experiences of a teacher during online learning. It illustrates both the challenges and joys of altered workloads and engaging with students.

Finally, in their critical perspectives of higher studies, utilising online modes of learning, Harshil Sathwara, Archie Joshi and Geetali Saha, note in their article "Critical Perspective Analysis of Higher Education Studies in the Online Mode – Emerging Challenges and Solutions" that academic progress can be sustained through deliberate efforts on the part of learners and teachers, in the online classroom. Their study observed that a refocusing of the educational lens could alter the way educational opportunities are provided and utilised in the post-pandemic world.

Compositely, these ten manuscripts articulate an emerging need to salvage and reclaim, following the disruption imposed by the pandemic. As a people, we have no choice but to move forward, and it is the lessons from this crisis which will inform and underpin our efforts in the education of tomorrow.

Pearl Subban
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Notes on Contributors

Article 1:

Online Higher Education: The Importance of Students' Epistemological Beliefs, Well-being, and Fun

Sujarwanto is a research scholar at the Department of Education, Universitas Negeri Surabaya in Surabaya, Indonesia.

Kieron Sheehy is a professor at the Faculty of Wellbeing Education and Language Studies at the The Open University in United Kingdom. Kieron's research interests are within the broad field of inclusive education, often focusing on how teaching approaches or services can be developed to successfully support diverse groups of learners.
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Article 2:

Perceived Discrimination and Students' Behavioural Changes: The Role of Cultural Background and Societal Influence

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Article 3:

The Effects of Learning Stations on Socioeconomically Disadvantaged Students' Achievement and Self-Regulated Learning

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Article 4:

Turkish Folk Music Lessons with Phenomenon-Based Learning: Preliminary Lessons and Results

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Article 5:

Effects of Gamified Learning on Students of Different Player Traits in Malaysia

Mageswaran Sanmugam acquired his B.Sc. (Hons) in Electrical Engineering from Universiti Teknologi Tun Hussein Onn in 2005 and Master's degree in Educational Management in 2012 from Universiti Utara Malaysia and Ph D in Educational Technology in 2017 from Universiti Teknologi Malaysia. He worked as an Educator in both Primary and Secondary schools from 2008-2018, before being appointed as a Senior Lecturer in the Centre for Instructional Technology and Multimedia, Universiti Sains Malaysia, Pulau Pinang, Malaysia (from 2018-till now). His research interests encompass educational technology, game-based learning, gamification and game theory. He currently serves as an exco-member in the Malaysian Educational Technology Association (META), and as a Senior Member under the Institute of Electrical and Electronics Engineers (IEEE).
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Anurita Selvarajoo graduated with B.Eng. (Hons) in Civil Engineering (Environmental) from Universiti Teknologi Malaysia, in 2006. She received her PhD in Fuels and Sustainability from University of Nottingham Malaysia, in 2013. She currently works as an Assistant Professor at the Department of Civil Engineering, Faculty of Science and Engineering, University of Nottingham Malaysia. Her research interests focus on interactive teaching technology for higher education. She serves as a reviewer in a number of journals such as Environmental Technology, Clean Technologies and Environmental Policy, Waste and Biomass Valorization and Elkawnie Journal of Islamic Science and Technology. Anurita is also an affiliate member with the Young Scientists Network of the Academy of Sciences Malaysia (YSN - ASM).

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Article 6:

Sustaining Language Learning Through Social Interaction at a Japanese National University

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Article 7:

"Where am I?" A Critical Discourse Analysis of Religious Representation

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Article 8:

No Campus Life for Us: Personal Reflections First-Year Students at a Malaysian University

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Article 9:

Teacher's Working Condition and Hybrid Teaching Environment – A Narrative Case Study

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Article 10:

Critical Perspective Analysis of Higher Education Studies in the Online Mode- Emerging Challenges and Solutions

Harshil Sathwara is pursuing an Electrical Engineering degree at G. H. Patel College of Engineering and Technology (2019-2023). His interest includes Renewable Energy, EVs, Power Electronics and IoT. He has won multiple Gold and Silver medals in Science, Maths, English and I.Q. Olympiads. He has attracted funding for filing a patent for his project Arogyakavacham- Automatic Hand Sanitizer Dispenser with Contactless Temperature Measurement and has his research paper on it selected in Intelligent Systems and Signal Processing (e-ISSP 2020) conference which is published in Springer's Advances in Intelligent Systems and Computing book series. He has also attracted funding of INR 35,000/- from SSIP for his projects.
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Archie Joshi is pursuing her BA honours at Pandit Deendayal Energy University. She has garnered much acclaim for her thorough academic records. In 2013-2014 she received the best student award for her model behaviour. She is well versed in linguistics and certified with nearly fluent proficiency in French and Korean. She was associated with Vedant Foundations as a content writer and translator. She is gifted with exemplary speech and is the co-founder of the podcast, The Thought Lane, which is available on various platforms. She published her poetry through *Women's Era* magazine.

Dr Geetali Saha is working as a Teaching Faculty in the Department of Electronics and Communication, GCET, Gujarat. She has worked on challenging Industrial and state funded projects, mostly based on real time IoT application. Her other interests include Time Series Prediction Models, Health Monitoring Interfaces, Hydroponics, Artificial NN and Deep NN. She has been associated as a Technical Program Committee Member, Reviewer and Technical

Session Chairs for various IEEE & Springer conferences in India and abroad. She is a book editor for Springer's AISC, eISSP 2020 proceedings. Department of Science and Technology (DST) and Texas Instruments (TI) have awarded Prof. Geetali Saha recognition in appreciation for fostering an ecosystem bridging Government, Industry and Academia.

Online Higher Education: The Importance of Students' Epistemological Beliefs, Well-Being, and Fun

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Abstract

The global pandemic has accelerated the 'move online' of higher education in Indonesia. This study aimed to examine the relationship between Indonesian students' experiences of studying online, their epistemological beliefs and their beliefs about fun in learning. A mixed method approach was used to examine this relationship in a sample of 774 students. A Principal component analysis (PCA) of questionnaire responses identified associations between social constructivist beliefs about learning and the centrality of fun in learning. The PCA was considered together with a thematic analysis of an open question 'Has the COVID-19 situation changed your feelings about online study?' This revealed the significance of the epistemic mismatch between many students' beliefs and the transmissive online pedagogy that they described. This mismatch is implicated as a factor in understanding the students largely negative experiences of online study and the impact on their well-being, albeit within the context of a pandemic. This is the first time that this link has been proposed. The research indicates that examining students' epistemological beliefs can offer insights that are helpful in understanding students' educational engagement and well-being when studying online.

Keywords: epistemological beliefs, fun, Indonesia, online higher education, well-being

Whilst many universities have previously sought to develop their online teaching provision, the global pandemic has accelerated this process with some choosing, and others being instructed by governments, to 'go online' (Havergal, 2020; Mishra, Gupta, & Shree, 2020). In the Republic of Indonesia, The Ministry of Education and Culture asked tertiary educators to provide 'meaningful' online learning experiences for their students (Hidayati & Saputra, 2020). This has been attempted in 80% of institutions, where the majority of students have left campus and returned to their home locations (Nugroho, 2020). These students are drawn from a population of over 270 million across Indonesia's unique geographical and cultural context. Indonesia is the 'most diverse multi-ethnic state in the world… [and] the world's largest archipelagic country of more than 17,524 islands" (Direktorat Pembinaan Sekoloah 2008). Given this scale and locational diversity it is not unexpected that one can find situations where Higher Education (H.E.) learning systems and infrastructures can be lacking or inadequate (Hidayati & Saputra, 2020). It is against this backdrop that many of Indonesia's eight million H.E. students (Harun, Wardhaningtyas, Khan, An, & Masdar, 2020) are experiencing distance education for the first time (Churiyah, Sholikhan, Filianti, & Sakdiyyah, 2020).

The pandemic notwithstanding, any students who receive their education online at distance are at greatly increased risk of drop out and disengagement from their studies (Meneses & Marlon, 2020) and this creates a significant issue for educators (Aydin, Öztürk, Büyükköse, Er, & Sönmez, 2019). Therefore, as more students are placed, perhaps unexpectedly, in online learning situations it is increasingly important for educators to understand the factors that influence their students' likelihood of success. Previous research has identified two key factors that are relatively underexplored in distance education: students' epistemological beliefs and their beliefs about fun in learning (Okada & Sheehy, 2020a).

Students' Epistemological Beliefs

Students epistemological beliefs reflect their conceptions of knowledge and how it is acquired (Marlene Schommer-Aikins, Unruh, & Morphew, 2015). These beliefs might include the extent to which learning occurs through information transmission (OECD, 2009) or issues such as notions of ability, the extent to which it is innate or develops through education (Schommer-Aikins & Hutter, 2002). One way of framing epistemological beliefs is to draw distinctions that reflect models of pedagogy and learning, for example traditional or constructivist beliefs (OECD, 2009), or social constructivist beliefs (Sheehy, Budiyanto, Kaye, & Rofiah, 2019). In this framing, students who hold traditional beliefs view the process of learning primarily as a simple transfer of knowledge from the teacher (Otting, Zwaal, Tempelaar, & Gijselaers, 2010). This contrasts with a constructivist perspective that foregrounds the importance of autonomous activities facilitated by a teacher (Markic & Eilks, 2013). The social constructivist perspective, drawing on the work of Vygotsky (Vygotsky, 1967), frames learning as an interactive social process mediated by language and other cultural tools (Okada & Sheehy, 2020a)

The importance of epistemological beliefs in higher education students' experience has been researched for over 50 years, and evidence indicates a significant association between the beliefs students hold and their subsequent academic performance (Richardson, 2013a; Rodriguez & Cano, 2007). For example students who hold beliefs that they can develop their abilities and actively construct knowledge appear to adopt more effective study strategies (Hao, Barnes, Branch, & Wright, 2017), with consequently better outcomes (Çevik, 2015). However, there is an absence of such work in the context of distance education (Richardson 2013), an absence which has become more noticeable given a global turn towards online provision.

Within Indonesian 'traditional' Higher Education there is a growing body of research regarding teachers and student teachers epistemological beliefs (Sheehy, Budiyanto, Kaye, & Rofiah, 2017), and research with college students (Aditomo, 2018) that indicates the impact of these beliefs on outcomes in different study areas. There is also some acknowledgement of its importance within English as a Foreign Language [EFL] education (Wulandari Tasik, 2020), on determining their online learning strategies (Rahmiati, 2019). However, overall, there is notable lack of research in Indonesian higher education regarding epistemological beliefs and online education.

The Notion of Fun in Learning in Higher Education

It has been argued that, in order to facilitate students' success, it is important to examine factors that influence students' engagement with their studies (Sharp, Zhu, Matos, & Sharp, 2021). Perhaps not unexpectedly, there is evidence of a significant correlation between the level of satisfaction that students report with their online learning experiences and their engagement with and completion of studies (Martin & Bolliger, 2018). Enjoyment positively influences student engagement (Bond, Buntins, Bedenlier, Zawacki-Richter, & Kerres, 2020; Groccia, 2018) and therefore it is logical to see the understanding and facilitation of enjoyment as a way of improving engagement and student success. One effect of enjoyment is an increased intrinsic motivation to study (Sharma, 2021), and an experience of having fun in learning promotes greater engagement and ability to cope with study demands (Reeve, Cheon, & Jang, 2020).

However, the notion of "fun" in higher education pedagogy is controversial. This is partly because whilst it can be defined as an emotion in relation to motivation and engagement (Reeve et al., 2020), its exact nature and meaning is unclear (Tisza & Markopoulos, 2021). Consequently, there is no consensus about its value for learning within higher education and there exists

> …an ongoing debate about whether it [*fun*] is appropriate in relation to adult learning, and many believe that it is unsuitable in the "serious" business of Higher Education. (Whitton & Langan, 2019, p. 3)

This perception of "unsuitability" may contribute to the lack of research into the value of fun within online H.E. education (Okada & Sheehy, 2020a). This debate can be discerned within the handful of relevant Indonesian studies that exist. For example whilst one study concluded that a positive or good mood would interfere with H.E. students' learning and motivation (Febrilia & Warokka, 2011), another concluded that fun helped to ensure academic motivation (Triyanto, 2019). In the context of EFL, fun was associated with positive learning experiences, and it was recommended that educators designed fun into their teaching (Tunnisa, Mahmud, & Salija, 2019). However, none of these studies considered the epistemological beliefs of the students, or the relationship between these beliefs and beliefs about fun in learning (Okada & Sheehy, 2020a). This study seeks to address this gap within H.E. research.

Research Context

The context for this research was the Universitas Negeri Surabaya (UNESA), East Java Indonesia. UNESA has approximately 39, 000 students, across seven undergraduate faculties and graduate school. Starting in 2016 UNESA began to develop its own online learning platform, Vi-learn UNESA, to support a blended learning model (Kristanto, Mustaji, & Mariono, 2017). Initially this form of provision was available for education and psychology courses, and by 2019 it had expanded to 100 courses across varied disciplines for around 5000 students. Alongside this, Kemenristekdikti (Ministry of Research Technology and Higher

Education) supports a national online education initiative SPADA (Sistem Pembelajaran Daring-Online Learning System), and individual lecturers may adopt these or other learning management systems (Wintarti, Masriyah, Ekawati, & Fiangga, 2019). In response to the international pandemic the Rector of UNESA enacted a regulation that all learning activities should move online (Sabtiawan et al., 2020). Consequently, the number of courses available in Vi-learn UNESA increased to approximately 150 courses undertaken by 7000 students.

This study sought to explore the relationship between epistemological beliefs and fun in learning for students studying at UNESA, in the context of the move online necessitated by the global pandemic.

Method

The use of questionnaires to collect data is an established approach within epistemological beliefs research (Schommer & Walker, 1995). A questionnaire was developed drawing on Indonesian epistemological research (Sheehy et al., 2017) that had been developed for use within an international H.E. context (Okada and Sheehy 2020a). The items are given in Appendix 1.

Items 1-4 collect demographic data: occupation, year and level of study, province.

Item 5 asks if the student is registered as disabled. This was added as the experience of disabled students within distance education has been highlighted as a significant issue (Spirina, Grabowska, & Liakh, 2020). There are over 4500 higher education institutions across the nation, yet only approximately five universities explicitly support access and enrol disabled students (Dzulfikar, 2019). UNESA is one of these few and has a disability support service to enable this, the Centre for Disability Studies and Services (Pusat Studi dan Layanan Disabilitas-PSLD).

Statements 6-9, 22-24 reflect models of learning (Social Constructivist, and Banking) and are taken from Okada and Sheehy (2020).

Statements 14-18, 10–12 relate to Constructivist and Traditional views of learning, from the OECD international survey (Organisation for Economic Co-operation and Development, 2010, 2013).

Statement 13 reflects the importance of beliefs concerning effort in learning in “non-western” epistemological research (Lee, Zhang, Song, & Huang, 2013).

Statements 25- 29 elicit beliefs about fun and happiness that emerged as stable items from Budiyanto et al.’s (2017) epistemological research.

Item 30 asks if the student enjoys studying online.

Item 31 asks if their feelings about online study have changed because of the COVID-19 pandemic. This item could be helpful in differentiating this cohort’s responses from subsequent research (Unger & Meiran, 2020).

This questionnaire therefore contains items that assess students’ epistemological beliefs, their notion of fun, and their experiences of studying online.

A preliminary discussion of the quantitative items and a tentative descriptive analysis occurred at the London School of Management Education international research conference 2021.

Ethics

Ethics review was conducted by the Human Research Ethics committees of the researchers' universities and favourable opinions were obtained for proceeding. Study information was posted on UNESA's official Telegram community in an education space. Students could then choose to respond, or not, to the anonymous questionnaire hosted on Qualtrics ™.

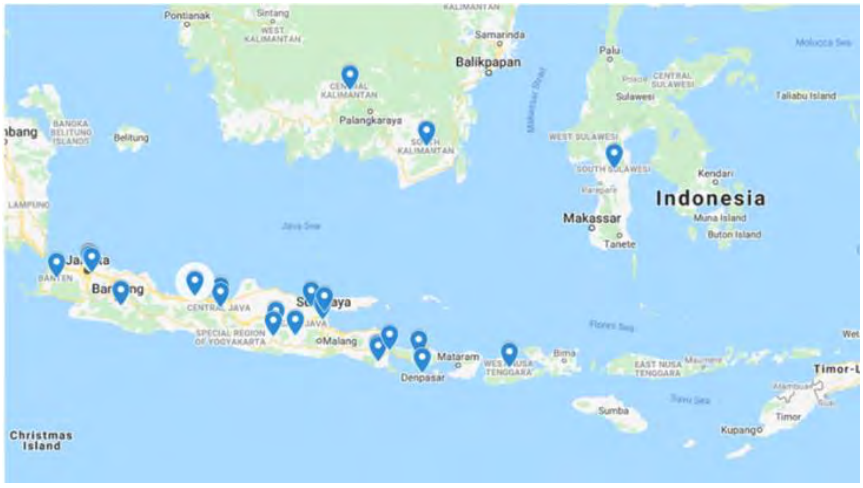
Findings

Responses were obtained from 774 students from across Indonesia.

Participants' locations and academic backgrounds. The locations of participants ranged across the Javan provinces, Kalimantan, South Sulawesi and the lesser Sunda Islands (see Figure 1).

Figure 1

Geographical Location of Participants [Map data ©2021 Google, INEGI]



This illustrates the potential reach of online education across Indonesia. The majority of participants (92.5%) came from an education and/or psychology discipline. Most (71%) were students in their 1st or 2nd year of study. All attended UNESA and 17 (2.2%) were registered as disabled students. To put this latter figure in perspective, UK universities report on average that 6.6% of their students are categorised as disabled (Williams, Pollard, Takala, & Houghton, 2019).

Response Analysis of Students' Epistemological Beliefs

The data were reviewed with respect to carrying out a principal component analysis (PCA). A Kaiser –Meyer–Olkin score of 0.911 was obtained, suggesting that factors could be extracted (Navarro Sada & Maldonado, 2007), and this was supported by Bartlett's test of sphericity ($p < 0.001$). A data scree plot suggested that 5 components could be extracted, and this was confirmed by considering the total variance explained. These 5 components, all with eigenvalues greater than 1, explained 52.66% of the variance in responses giving a moderate amount of explanatory power (Navarro Sada & Maldonado, 2007) typical in social science research (Taherdoost, Sahibuddin, & Jalaliyoon, 2014). The relative correlations between the

potential components were examined to select the type of data rotation (Dean, 2009) and a direct Oblimin rotation was chosen, with a cut off at 0.35 (see Table 1).

Table 1
Pattern Matrix

	1	2	3	4	5
Helping students to talk to one another productively is a good way of teaching.	.715				
Learning can be defined as the social production of knowledge	.703				
Meaningful learning occurs when students are engaged in social activities with society	.669				
Students learn best through collaborative activities.	.634				
Teaching should be built around problems with clear, correct answers.	.532				
Effective/good teachers demonstrate the correct way to solve a problem	.449				
Students who begin university with “average” ability remain “average” throughout their studies		.771			
Students’ educational potential is fixed at birth.		.725			
All students should be taught in homogenous classes according to their intelligence.		.717			

I believe there should be a single teaching method applicable to all learning situations.		.602			
Learning should involve fun			.892		
To learn effectively students must be happy			.873		
Students and teachers should participate in learning from diversity together			.680		
Fun activities can get in the way of student learning			.735		
Fun is part of curiosity and discovery			.438	-.409	
Students learn best by finding solutions to problems on their own.				-.741	
I do not enjoy studying online					.800
Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved.				.688	
The teacher's role is to facilitate students' own inquiry.				.570	
Thinking and reasoning				-.514	.354

processes are more important than specific curriculum content.					
Learning occurs when students reflect on their action in a diverse world				-.470	
How much students get from their learning depends mostly on their effort.				-.449	

Extraction method: Principal Component Analysis
Rotation method: Oblimin with Kaiser normalisation

Component 1. ***Social constructivist and traditional pedagogies together.*** This component was formed from items related to social constructivist beliefs about teaching and learning. This view highlights the social production of knowledge, the importance of "talk", and collaborative learning. These associations have been identified in European research (Alexandra Okada & Sheehy, 2020b). However, in this Indonesian sample these beliefs are also associated with, and not clearly differentiated from, teacher-led demonstrations of how to solve problems, and the value of having problems with clear correct answers, which have been seen as representing traditional pedagogy (Organisation for Economic Co-operation and Development (OCED), 2013).

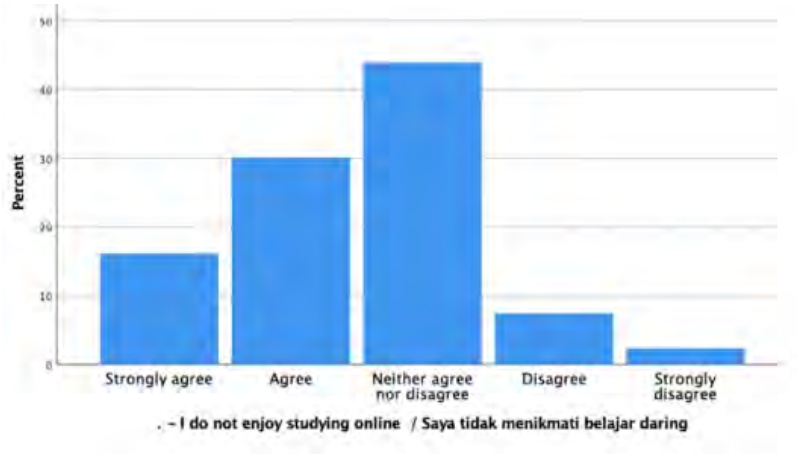
Component 2. ***Streamed by fixed abilities.*** This component contains beliefs that a person's abilities are innate and fixed, and that students should be taught in homogenous, that is, "streamed" groups always using a single teaching method.

Component 3. ***Inclusive, collaborative fun for happy learners.*** Here happiness and enjoyment are believed to be pre-requisite for effective learning. This occurs through the collaborative learning of teachers and students in the context of diversity, and should involve fun. However, this is tempered by a belief that not all fun activities can support learning.

Component 4. ***Discovery is not fun, and reflection is unnecessary.*** This component holds beliefs that seem opposed to constructivist teaching approaches, in which teachers facilitate students thinking about and solving problems. In line with this are beliefs that discovery learning is not fun (in contrast to Component 3) and sees the learner as relatively passive.

Component 5. ***Online content delivery is not enjoyable teaching.*** Two items are grouped here, a belief that thinking and reasoning are more important than specific content, and not enjoying studying online. The component title here is tentative, suggesting that this lack of enjoyment is associated with online teaching that prioritizes content delivery-and that this has been their experience. As Figure 3 illustrates 46% of the sampled students did not enjoy studying online.

Figure 2
Responses to Item "I Do Not Enjoy Studying Online"



This lack of enjoyment was reflected across different subject disciplines and the disabled student's group.

The disabled students' responses to the "enjoyment" question differed significantly from their peers (independent samples Mann Whitney U, $p<0.001$), with 14/17 (i.e. 82%) responding as not enjoying, and 3 neither agreeing or disagreeing. In this respect they were more "extreme" than their non-disabled peers.

Thematic Analysis of Students' Experiences of Studying Online
Insights into students experience of studying online during the pandemic were suggested by their responses to the open question "Has the COVID-19 situation changed your feelings about online study?". Participants' responses were analysed thematically with coding being carried out by hand (i.e. no software package was used) derived from the steps proposed by Braun and Clarke (Braun & Clarke, 2006; Odendaal, Hattingh, & Eybers, 2019). The responses were interrogated repeatedly to code and construct themes (Langdridge, 2004). This allowed the identification of four themes that appeared as important in the data (Fereday & Muir-Cochrane, 2006). Each is described in turn and illustrated with exemplar comments.

Online Study *becomes* Boring and Students Become Demotivated
Even students who initially enjoyed studying online could become bored. For example:

> *I used to feel that studying online was fun. However, learning is getting more and more boring and unpleasant.*

> *Yes, because learning* ***becomes*** [our emphasis] *very boring.*

Several factors contributed to this situation. These were barriers that impeded social interactions, reducing conversation with lecturers, and hindering social interactions with friends. Learning became less fun.

> *Yes. Because online learning makes me feel bored and it is more difficult to discuss talking with and from the lecturer. It's more fun if learning to rub* [engage face to face] *with friends.*

This change of experience appeared to be associated with students becoming "lazy" that is, demotivated or tired, which was repeatedly mentioned. This could be seen partly because of the physical demands of increased screen-time.

> *Changes have also occurred in my enthusiasm level, I used to be offline, I was very enthusiastic when meeting friends and lecturers to study but now sometimes I am lazy because I stare at my cellphone for a long time so it can cause sleepiness and hot eyes.*

> *The thing that makes me feel uncomfortable is when I have to stare at the screen of my cellphone / laptop for a long time, it makes my eyes dry and I get tired quickly.*

Students who found themselves "not feeling like doing" and demotivated also cited the role of technological barriers, and the importance of accessing a stable network signal.

> *Yes, from those who used to be accustomed to face-to-face learning, they now have to go online. where the main internet connection is most important for online learning.*

> *Yes, because sometimes feelings easily change* [from happy to demotivated] *when suddenly there is an internet network disruption.*

There are also costs of associated with accessing information, which has changed some students study experiences.

> *Initially I was excited about the online learning process because it can improve concentration, but it has become increasingly uncomfortable with online learning because it requires a lot of internet quota while finances have decreased since COVID-19.*

> *Learning online is wasteful in spending* [money] *to buy internet quotas.*

The home situation itself [outside of cost and signal issues] could have a negative impact.

> *There is also a feeling of boredom with the atmosphere of studying at home which causes you to feel unfocused during lectures.*

> *I lost enthusiasm and motivation to learn. Because the condition of the house is not supportive.*

What this theme suggests is that the "move online" has had a significant impact on some students' study experience. The changes have resulted in many becoming bored and demotivated with their studies, a situation that is exacerbated by technology related barriers and home conditions. However, for a minority the changes were perceived positively.

A Qualified Success for Some

A few students explicitly reported that the move online had positive consequences for them. Some valued the flexibility that the new approach offered.

> *Online learning only started during COVID and I just enjoyed it because in some ways it became more flexible and less rigid.*
>
> *Yes, we can follow the learning flexibly*

Others enjoyed being able to use technologies.

> *Yes, because I don't think online learning is too boring and we take full advantage of technology.*

The role of moving online in tackling the pandemic, and as part of supporting their community, was also mentioned.

> *Yes, I feel more positive lately, I think it's because through this pandemic we have to be healthier, have more understanding of various things, respect each other and also take care of each other.*

More typically however, these indications of positive consequences were qualified, and juxtaposed with the less positive factors.

> *Yes. I like to be able to study at home close to my family, but on the one hand I am tired because I have to study extra in places where it is difficult.*

A Decline in Mental Well-Being

The third theme highlights the impact that the move online was having on mental well-being. This was sometimes linked to factors indicated in the previous themes but was pervasive enough in the coding to emerge as a distinct theme.

Many students had experienced increased stress levels.

> *It's not just that online learning is not as effective as face-to-face learning … emotions tend to be unstable, increased stress levels, dizziness and tired eyes.*

And feelings of anxiety:

> *I became less confident and often felt [feel] anxious.*
>
> *Yes, anxiety increases because of the difficulties that exist.*
>
> *My feelings when studying online are sometimes anxious and angry when I can't join the zoom meeting because of the unsupportive signal.*

The impact over time of these changes could be significant.

> *Yes, studying online is quite physically and psychologically draining.*
>
> *Feel burnout at home, I can't manage my rest time.*

This change could impact on students' general mood to differing degrees. For some this was a temporary dip.

> *Yes, because studying online, sometimes there are network constraints that can cause a person's mood to go down.*

In other cases, a low mood had become associated with studying.

> *Studying online is boring so when studying I feel a little depressed and bored.*

> *There is a change in mood for studying.*

There were also more profound changes.

> "***It really changed me***. [our emphasis] *Even though the beginning of the pandemic, I really used it to read a lot and think about and find out things that had not previously been crossed. However, over time all of this actually made me depressed because I could not learn directly and rarely interacted with it, reducing my sensitivity and critical power.*

> *Absolutely because it makes me feel like uncomfortable, low esteem instead.*

A Less Social Pedagogy Isolates Students

The move online had interfered with the social interactions that students valued within their teaching.

> *... what has changed is the interaction with lecturers and friends, which is now very limited, in the past it was very easy to ask questions that [I] did not understand and look for sources of information in the library, but now it is difficult which changes the interaction between students and lecturers and between students to be changed and less optimal.*

Students reported that they had valued previous face-to-face opportunities to discuss issues with lecturers and their peers. These had been replaced with a "new pedagogy", which delivers online lectures accompanied by increased assignments to be completed alone.

> *Lecturers rarely come down to explain the material and only give a lot of assignments.*

> *Less efficient learning and more assignments than explanations from lecturers*.

In the new online context students felt less able to ask questions or contribute.

> *Because I feel less confident in expressing my opinion and facing the camera.*

> *If there is a discussion forum we feel uncomfortable.*

The "new pedagogy" required learners to be more independent but its lack of interaction created issues.

> *Yes, because you are required to be more independent, and learning interactions that do not meet directly make you confused because there are many misunderstandings*

> *In short, what has changed is that we are required to understand various tasks and follow the demands of the task quickly.*
>
> *Alone and not sociable.*
>
> *I am confused about the many tasks, and I find it unpleasant to study alone.*

In the online context teaching materials and presentations can lack transparency.

> *The material explanation is not as clear as when lecturing offline.*
>
> *Plus starting to enter the world of lectures, a new world that is of course a lot of confusion and more and more confusion due to this online system.*

There were also resource issues for students who had relied on physical resources (e.g. books, databases, teaching materials) and emotional reassurance and support through peer discussion. Whilst these issues might be predicted-for some the impact could be profound.

> *It feels like you're struggling alone.*

Discussion

The findings of this research make an original contribution to the research literature concerning the epistemological beliefs of Higher Education students and their relationship to the notion of fun in learning. It is the first Indonesian study to explore this area. The qualitative analysis offers original insights into the effects that the "move online" has had on the study experiences of Indonesian students, and how this has impacted on their well-being. Considering the qualitative and quantitative analyses together allows insights to be developed about the relationship between students' epistemological beliefs and the impact of the "new pedagogy". Consequently, this is the first study to show that epistemological beliefs are an important factor in how students respond to and are affected by the move online necessitated by the global pandemic.

The importance given to collaborative social interactions in learning is evident in the open comments' analysis. This is also seen in Component 1 and 3. Component 1 shows that student's see learning occurring both through social constructivist and via traditional teacher-led approaches. The distinctions between social constructivist and traditional beliefs found in Western Europe research (Allodi & Carstens, 2013) are not found here. This complements a lack of a dichotomous differentiation identified in previous research in some Asian countries (OECD, 2009; Sheehy, Budiyanto, Kaye, & Rofiah, 2017).

Collaboration is seen as important in learning (Components 1 and 3) and Component 3 indicates that fun, within the context of collaboration is believed to be a prerequisite for effective learning. Research into the nature of fun in online learning is nascent, however the findings here suggest that this component is describing "Collaborative fun" (Okada & Sheehy, 2020). A major impact of the move online on students has been on their opportunities for collaborative learning. In this way a particular type of fun has been removed from their learning experiences.

Component 5 indicates the association between beliefs that thinking and reasoning are more important in learning than specific content and a lack of enjoyment of online study. That so many students (46%) do no enjoy online study [and 45% neither agreed or disagreed] suggests that the "new pedagogy" is that of content delivery. This is confirmed in the qualitative themes in which the model of online learning is perceived as transmission of information accompanied by an increased number of individual assignments. The concept of epistemic match (O'Siochru & Norton, 2014) is helpful in understanding this situation. This refers to the match between a student's epistemological beliefs and the beliefs that, perhaps implicitly, underpin the pedagogy of their teachers. A student whose beliefs are a close match with those of the pedagogy will be better able to locate the knowledge they need. (O'Siochru & Norton, 2014). In the current research a lack of epistemic match is evidence for some students. This lack of epistemic match, occurring in the context of the other factors identified in the thematic analysis, contributes to student's lack of satisfaction.

Previous research has suggested that a lack of epistemic match will have a negative impact on students' academic outcomes (Dai & Cromley, 2014; O'Siochru & Norton, 2014). Our research offers a different perspective in the context of online learning. For students who value social interaction as an essential part of their learning, the impact of the epistemic mismatch appears to have had a profound effect on their personal well-being. Students can feel that they are "struggling alone" and over time this can have a negative effect. A caveat to this argument is that the students were studying within a pandemic in which many aspects of their lives will have been negatively impacted. With this caveat acknowledged, it seems reasonable to conclude that for many there were well-being consequences of a pedagogy without collaborative fun.

Recommendations

This research reveals how Indonesian students' epistemological beliefs relate to notions of fun in learning, in particular the association between collaborative learning and fun. For many, collaborative fun is seen as essential for learning and their engagement is reduced when this does not exist. This is an issue of "epistemic match" (O'Siochru & Norton, 2014) and to address this educators should directly analyse the pedagogic epistemologies that are being enacted within their online teaching contexts. The findings also inform future comparative research. It has been suggested that there are different conceptualisations of happiness and fun in different cultures (Jaafar et al., 2012) and these findings suggests that in Indonesia learning is not seen as separate from social emotional networks but is part of it (Budiyanto, Sheehy, Kaye, & Rofiah, 2017; Wulandari & de Jager, 2018). This emotional enmeshment of learning and fun arises within social collaboration and so would appear difficult to create with an online transmission pedagogy. The "move online" is likely to continue post-pandemic (Lemoine, Waller, McCormack, Garretson, & ..., 2021). Therefore, eliciting and understanding these factors, which our research shows impact on students learning and well-being during online study, will remain a key issue for educators. Consequently, students' epistemological beliefs and notions of fun should be part of this area of future research.

Conclusion

The research highlights students' epistemological beliefs as an important factor in their engagement with online study. It offers original insights that show that there is a relationship between the nature of these epistemological beliefs and students' beliefs about the relationship between fun and learning. These students had begun their online studies as a consequence of

the COVID-19 pandemic. Many reported a dissatisfaction with their study experience and also decline in their well-being. In exploring this situation, this research suggests that the epistemic match between students and the online pedagogy is an important factor in this situation, which has been previously overlooked.

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Appendix 1

The Questionnaire items.

1. In which province do you live?
2. What is your current area of study?
3. What is the level of you current study.
4. Which university do you study at.
5. Are you considered by the university as a disabled student?

For the statements below please select a number. 1 is strongly agree, 2 is agree, 3 is neither agree or disagree, 4 is disagree, 5 is strongly disagree

6. Students learn best through collaborative activities.
7. Helping students to talk to one another productively is a good way of teaching.
8. Meaningful learning occurs when students are engaged in social activities with society.
9. Learning can be defined as the social production of knowledge
10. The teacher's role is to teach facts.
11. Teaching should be built around problems with clear, correct answers.
12. Effective/good teachers demonstrate the correct way to solve a problem.
13. How much students get from their learning depends mostly on their effort
14. Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved.
15. Students learn best by finding solutions to problems on their own.
16. The teacher's role is to facilitate students' own inquiry.
17. Thinking and reasoning processes are more important than specific curriculum content.
18. Students' educational potential is fixed at birth.
19. Students who begin university with 'average' ability remain 'average' throughout their studies
20. All students should be taught in homogenous classes according to their intelligence.
21. I believe there should be a single teaching method applicable to all learning situations.
22. Learning occurs when students reflect on their action in a diverse world
23. Fun is part of curiosity and discovery
24. To learn effectively students must be happy
25. Learning should involve fun
26. To learn effectively, students must enjoy learning
27. Fun activities can get in the way of student learning
28. Has the Covid 19 situation changed your feelings about online study? If so, mention briefly what has changed.

Perceived Discrimination and Students' Behavioural Changes: The Role of Cultural Background and Societal Influence

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Abstract

Discrimination among students in educational institutes is one of the key reasons for their behavioural changes. Research has increasingly recognized the discriminating behaviour of teachers, but the impact of perceived discrimination by teachers on students' behavioural changes has not been investigated enough. Applying a theoretical model based on Phenomenological Variant of Ecological Systems Theory (PVEST), the present study aimed to investigate the manner in which students' behavioural changes were determined by their teachers' perceived discrimination, after knowing family background and how this relationship was moderated by societal influence and cultural background. A sample survey of 215 class 8 to class 10 students studying in rural and urban schools located in Krishnagiri district in Tamil Nadu, India was administered through questionnaires and partial least squares-structural equation modeling (PLS-SEM) was used to evaluate the gathered data. Overall, perceived teacher discrimination of students based on their caste, creed, and financial background significantly influenced students behaviour. The association between students' behavioural changes and perceived discrimination was significantly influenced by cultural background. However, societal influence did not significantly change the effect of perceived students' discrimination on their behavioural changes.

Keywords: behavioural changes, cultural background, family background, perceived discrimination, students' societal influence

Effective pedagogical environments have a direct connection with students' interactive behaviour. Perceived discrimination is a common practice across educational institutions (Hagiwara et al., 2017) and contributes to the gap in the caste and creed concerning the interactive behaviour of students (Utsey et al., 2008; Mittal, 2020). Perceived discrimination can be defined as a perceived approach wherein personal characteristics (e.g. physical appearance and sexual orientation), attributes (e.g. gender and race), and other social factors are used to differentiate or exclude a person or a group of persons (Giurgiu et al., 2015). The discrimination of students by teachers based on caste and creed is considered as differential and biased treatment (Carter et al., 2017). Multiple negative outcomes such as mental health and physical health deteriorations, negative social interactions, etc., are primarily caused by perceived discrimination (Brondolo et al., 2009). The classroom environment is compromised and interactive behaviour between students and teachers is affected negatively by teachers' discriminating behaviour (Jennings and Greenberg, 2009). Discriminatory attitudes of teachers result in students' reduced sense of belonging, disengagement from classroom teaching all of which can hinder students' behaviour in educational institutions (Kidger et al., 2016). In addition, previous studies have stated that discriminating behaviour in educational institutes affects the students' academic performance and psychological behaviour (Alvarez et al., 2004; Cogburn et al. 2011; Sisask et al., 2014; Banerjee et al., 2018).

Factors that might buffer or prompt discrimination among students and the influence of teachers' discrimination on students' learning outcomes and behavioural changes must be recognized by teachers and counsellors (Sehgal et al., 2017). Among Indians, cultural backgrounds and societal factors affect sensitivity to perceived discrimination (Wu et al., 2015; Yasui et al., 2015). Thus, the experience of perceived discrimination is not determined by caste and creed, but by the overlap of cultural background and societal influence (Assari and Lankarani, 2017). As the value system, attributions and standards of each intersectional group are unique, the causes and effects of the same perceived discriminating experiences may be different (Caldwell et al., 2013).

Several studies have illustrated that students face discrimination based on religion, socio-economic status, and gender which includes religion-based bullying of students by teachers, discrimination in seat arrangements and exclusion based on gender (Ramachandran and Naorem, 2013; Dupper et al., 2015; Robnett, 2016). Caste-based discrimination was evident in schools from Telangana and Andhra Pradesh where students were denied from participating in extracurricular activities such as sports, cultural activities, and so forth. (Dongre, 2017). The discrimination of primary school students based on socio-demographic factors like age, family background and parenting styles were reported in Mangalore, India (Joseph et al., 2021). Although there are abundant studies on the conflict-inducing approach of teachers, studies focusing on the discriminating behaviour of teachers are scarce and scattered (Ali et al., 2019). Despite the fact that some studies have considered the relationship between teacher-student relationship and students' perceived discrimination, the effect of perceived discrimination by teachers on students' behavioural changes has not been investigated enough. In addition, though perceived discrimination is quite prevalent among students (Rosenbloom and Way, 2004), investigation regarding differences in family background, cultural background and societal influence concerning the impact of teachers' discrimination on students' behavioural changes is limited (Bryan et al., 2018). Moreover, studies that developed and utilized an integrated framework investigating the components (environmental and individual characteristics) that control the consequences of perceived discrimination on students' behavioural changes are not adequate (Williams & Bryan, 2013; McGee & Pearman, 2014). Furthermore, studies with larger sample sizes to test moderations of perceived students'

discrimination on students' behavioural changes are needed. The present study is unique because it explores students' behavioural changes.

Thus, to fill the relevant research gaps, the present study aimed to explore the effect of perceived discrimination by teachers on behavioural changes among students after controlling for family background. Besides, the study aimed to assess whether cultural background and societal influence controlled the association between students' behavioural changes and perceived discrimination. Identification and examination of elements that control the consequences of teachers' perceived discrimination on students' behavioural changes can support the formulation of relevant precautionary measures. Considering the past studies on sensitivity to discrimination (Wildhagen, 2011; Slobodin et al., 2021), this study anticipated a wider impact of perceived discrimination on students' behavioural changes in the presence of moderators.

Theoretical Underpinnings

Utilizing integrated frameworks that highlight the mechanisms and cause and effect relationship, is vital for academic performance. This is specifically applicable when student outcomes are considered because of risk factors based on individual and environmental characteristics. Hence, this study turns to the Phenomenological Variant of Ecological Systems Theory (PVEST) (Spencer, 1995), which posits the role of contextual influence (social, cultural and family) on the development of young people (Spencer 1999). In the context of the PVEST framework, the significance of examining risk factors (e.g., caste-based discrimination) and how they have been linked to negative outcomes has been highlighted (Spencer et al., 2003). The effect of perceived school-based discrimination of students by teachers is examined in this study and it is theorized as total stress involvement in the PVEST framework. Such stress engagement might be associated with negative outcomes for youth in academic settings. Then again, perceived caste-based discrimination of youth might be linked to more adaptive outcomes by the protective element of culture-family socialization.

Discrimination as a risk factor for behavioural outcomes. The differential treatment due to race, religion, caste, creed and economic backgrounds is termed discrimination (Smart Richman and Leary, 2009). Unfortunately, in the present scenario, educational institutions have become one of the common spaces for all kinds of student discrimination. Caste and economic backgrounds are listed as the main bases of discrimination in the Indian education system (Desai and Kulkarni, 2008). Discrimination based on caste, creed and economic backgrounds in Indian educational institutions has been prevalent for decades. The physical elimination and biased attitude of teachers towards the predicament of ostracized pupils is forcing several learners to behave negatively and despite functional preventive interventions, little is being done by administrations to address the issue (Sitlhou, 2017). Any such injustice taking place in educational institutions affects the academic outcomes, psychological health, and school engagement of the students.

A negative teacher-student relationship, including a perceived bias, predicts poorer behavioural functioning in adolescents (Hamre and Pianta, 2001). Jain and Narayan (2011) highlighted the discrimination faced by the students based on their religious beliefs. Ramachandran and Naorem, (2013) pointed out that the students belonging to lower caste were not permitted to seat adjacent to an upper caste student. Further, the biases faced by backward caste students were demonstrated by Kurian (2015). Additionally, Wenz and Hoenig (2020) also illustrated the discrimination against the students. However, all these studies failed to assess the impacts on student outcomes. Few studies like Ingul et al. (2012) reported that the psychological

adjustment due to bias led to negative perceptions about the school that in turn resulted in reduced students' interactive behaviour. Rueger and Jenkins (2014) highlighted diminished physical and mental health as a result of discrimination among students. Thus, persistent discrimination based on caste, creed and economic background ultimately results in negative behavioural outcomes, even in the education sector (Ali et al., 2019). The below-mentioned hypothesis is formulated based on the discussion:

H1: There is a significant impact of perceived discrimination of students by teachers based on caste, creed and economic backgrounds on students' behavioural changes

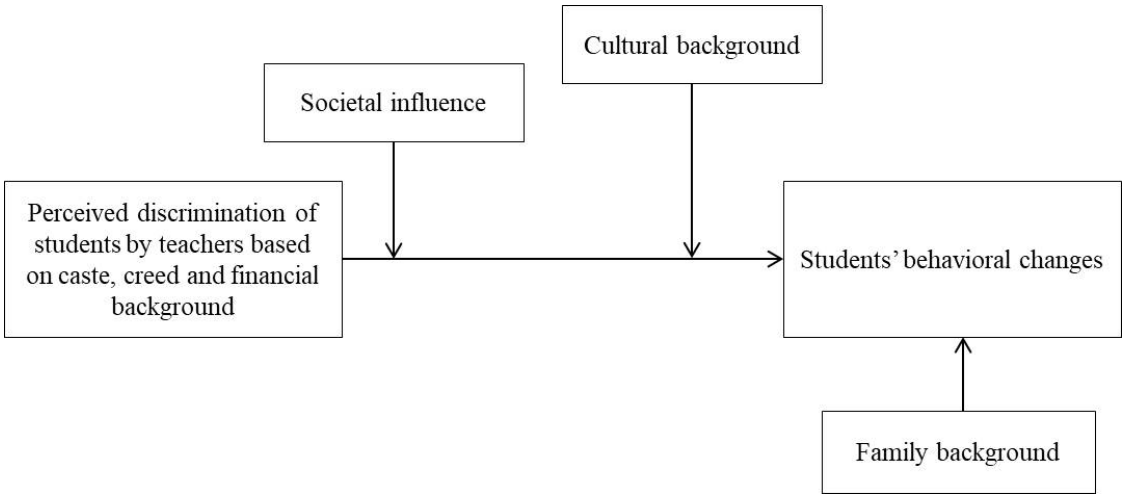
Role of family background, cultural background and societal factors. Based on the academic resilience outlook, moderating the relationship is one of the individual and environmental characteristics that affect the association between outcomes and risk factors (García-Izquierdo et al., 2018). Students' overall success and academic performance is determined by their family background, which is largely expressed as the socioeconomic status (Adeyemo and Kuyoro, 2013). Besides, a substantial association between the prevalence of behavioural problems in students and their family background in terms of parents or caretakers being alcoholic or absent is evident in literature (Jogdand and Naik, 2014). Discrimination among students is reportedly predicted by a low socio-economic status (Jackson et al., 2012). Previous studies have examined family background as an individual variable that may modify student outcomes (Lee et al., 2015). Students belonging to marginalized families are more likely to experience behavioural changes caused by perceived discrimination by teachers (OECD, 2017).

Researchers have emphasized that cultural background has theoretical groundwork in the social identity theory (Tajfel and Turner, 1986), theorizing that the risk outcome of perceived discrimination may be mitigated for individuals who identify with their cultural background (Phinney, 2003). However, in the context of educational institutions, previous studies also suggest that identification with a cultural background may result in negative student outcomes due to increased awareness of negative labels and little importance of positive societal influence on the cultural background (Oyserman, 2008; Wildhagen, 2011). For instance, in a longitudinal study by Cheng and Klugman (2010), students possessing a minority cultural background had lower connectedness to schools. Banerjee et al. (2018) highlighted the prevalence of discrimination by teachers based on students' cultural background, which buffered the influence of perceived discrimination on students' learning outcomes. Although perceived discrimination may exist in multiple contexts, all forms represent different degrees of risks to various types of social identity needs, which relate to changes in behavioural outcomes (Verkuyten et al., 2019). Consistent with the role of these factors in existing literature, this study offers the following hypothesis.

H2: Cultural background and societal influence moderates the effect of perceived discrimination by teachers on students' behavioural changes

The conceptual framework proposed here builds on the perceived discrimination of students that has been supported by theoretical perspectives to act as a direct antecedent of students' behavioural changes when controlling for family background. The alternative framework builds on the idea that cultural background and societal influence will moderate the association between students' behavioural changes and their perceived discrimination. These propositions are illustrated in Figure 1.

Figure 1
Theoretical Framework of the Present Study



Materials and Methods

Sampling Procedure and Survey Administration

The present study used a quantitative research method and adopted a random sampling procedure to collect data through a survey done on school students from class 8 to class 10 studying in one rural school and one urban school located in Krishnagiri district in Tamil Nadu, India. In total, 215 questionnaires were found useful for further analysis. The student sample included 116 males (54.0%) and 99 females (46.0%). Most of the students were aged between 16 and 18 years (63.3%). The sample included 113 class 10 students (52.5%), 58 class 9 students (27.0%) and 44 class 8 students (20.5%), respectively. The student sample included 66 family heads as skilled workers (30.7%), 60 as farmers (27.9%), 44 as unskilled workers (20.7%), 39 as government employees (18.1%) and 6 were unemployed (2.8%).

Research Instrument

This study included one exogenous variable: Perceived discrimination of students. The endogenous variable was students' behavioural change. Cultural background and societal factors are used as moderating variables. Family background is used as the control variable. This study employed a structured questionnaire consisting of 30 items that measured five variables used in the study. Some questionnaire items were negatively framed to check the response bias. The first couple of statements were designed to understand perceived students' discrimination by adapting eight items from Fox and Stallworth (2005), Gelisli (2007) and Ali et al. (2019). Meanwhile, to measure behavioural changes of students, six items were adapted from Ali et al. (2019). Besides, societal factors and cultural background were explained by six and three items by Soric (2011). Moreover, to assess family background, three categorical items were adapted by Sun and Shek (2012) and Ali et al. (2019). All the variables, except for the family background, were assessed through a 5-point Likert scale, wherein strongly disagree was indicated by 1 and strongly agree was indicated by 5.

Data Analysis

The partial least squares (PLS)-structured equation modelling (SEM) technique was used to analyse the data, inspect the latent constructs used in the measurement model, and test the interactions between latent constructs and moderators in the structural model, as indicated in

Figure 1. A three-step process was followed in which R^2 and sizes of effects for "perceived teachers' discrimination" on "students' behavioural changes" were evaluated. First, the model was run without the moderators (cultural background and societal influence); secondly, the direct effects of "cultural background" and "societal influence" on students' behavioural changes were measured; and thirdly, "cultural background" and "societal influence" were incorporated and moderator effect was assessed. Following guidelines from Streukens and Leroi-Werelds (2016) for estimating the statistical significance of path estimates using PLS-SEM, bootstrapping technique was executed using 10,000 sub-samples to increase the degree of precision. SmartPLS and IBM SPSS were employed to analyze the data and generate the results.

Results

Analysis of the Measurement Model

The measurement model was assessed by the study to ensure relevant reliability, composite reliability, and construct validity of the scales used. The various items of latent variables were subjected to confirmatory factor analysis (CFA) to assess overall fitness of the measurement model. The result of the factor analysis of the study constructs is illustrated in Table 1. Average variance extracted (AVE) values and factor loading values were found greater than 0.50, thereby ensuring convergent validity (Fornell and Larcker, 1981). Composite reliability (CR) of the variables was above the threshold of 0.70 and it ranged between 0.78 and 0.81 (Hair et al., 2017). It can be inferred that constructs had high internal consistency for items associated with each variable. The remaining constructs were eliminated as the AVE values were less than 0.50.

Table 1
Reliability and Validity Outcomes

Latent constructs	Cronbach's Alpha	Factor loading	CR	AVE
Perceived teachers' discrimination	0.65		0.81	0.59
DS1 Teachers don't answer my questions in the class		0.81		
DS3 Teachers make disrespectful comments towards me in the class because of my caste		0.82		
DS8 I feel that teachers always pay attention to students of higher caste		0.66		
Cultural background	0.60		0.80	0.66
CF1 I have some beliefs that affect my interaction with students of other caste		0.76		
CF3 The curriculum provided by my school is based on different cultural backgrounds		0.87		
Societal influence	0.60		0.78	0.54
SF3 I am disciplined at school because I am disciplined at home		0.74		
SF4 I interact with students of different caste		0.69		
SF5 The society has been the primary influence in my life regarding how I feel about people of other caste		0.78		
Students' behavioural changes	0.60		0.78	0.54
BCS1 I am not interested in listening to lectures in the class		0.78		
BCS2 I like to talk to my friends during the class		0.69		
BCS5 I do not submit class assignments		0.74		

Note: CR=composite reliability; AVE=average variance extracted

A test of discriminant validity was assessed for all construct variables in the model. The analysis presented in Table 2 shows that the AVE square root values of each construct were higher than the multiple correlation values for the respective constructs, which demonstrated the discriminant validity of all construct variables in the model (Hair et al., 2017).

Table 2
Discriminant Validity Indicators

Construct	BCS	CB	DS	SF
Behavioural changes (BCS)	**0.73**			
Cultural background (CB)	0.45	**0.81**		
Perceived teachers' discrimination (DS)	0.64	0.37	**0.77**	
Societal influence (SF)	0.70	0.34	0.62	**0.74**

The Heterotrait-Monotrait (HTMT) criterion was also used to assess discriminant validity. The analysis presented in Table 3 demonstrates that the HTMT values were below 0.90, thereby confirming the absence of any issues on discriminant validity (Fornell and Larcker, 1981). Thus, the variables were distinctly different from each other. Therefore, discriminant validity was achieved.

Table 3
Heterotrait-Monotrait Ratio (HTMT)

	Behavioural changes	Cultural background	Discrimination	Societal influence
Behavioural changes	-			
Cultural background	**0.82**			
Perceived discrimination	0.88	**0.64**		
Societal influence	0.83	0.61	**0.88**	-

Analysis of the Structural Model

Based on the assessment of the measurement model, the reliabilities and validities of the present model are confirmed, from which the structural relationships and significance of the hypotheses are established. The Q^2 value was greater than zero for the endogenous construct, indicating an adequate predictive relevance of the model (Geisser, 1975) (Table 4). The level of perceived students' discrimination can be explained by 61.0% variation in students' behavioural changes, thereby explaining nearly moderate to high variance (Chin, 1998) (Table 4).

Further, the PLS-SEM allows for identifying the significance of the relationships between the variables. In considering their effect on each other, the association between students' behavioural changes and perceived discrimination showed a highly (0.29) significant effect in the model (Figure 2), thereby confirming H1. Concerning the influence of moderating variables on the association between dependent and independent latent variables, the results showed that cultural background significantly but negatively moderates the effect of perceived students' discrimination on behavioural changes ($\beta = -0.12$, $T = 2.13$, $p < 0.001$), implying that cultural background can significantly reduce the effect of perceived students' discrimination on their behavioural changes. However, it was also observed that societal influence did not significantly increase or decrease the effect of perceived students' discrimination on their behavioural changes ($\beta = 0.03$, $t = 0.70$, $p > 0.05$) (Table 4).

Table 4
Structural Paths and Related Indicators

DV	IV	Hypothesis	Path estimates	t-Value	Significance (result)	R^2	Q^2
BCS	DS	H1	0.29^{***}	4.47	Supported	0.61	0.30
	DS*CB		-0.12^{*}	2.13	Supported	-	-
		H2					
	DS*SF		0.03	0.70	Not supported	-	-

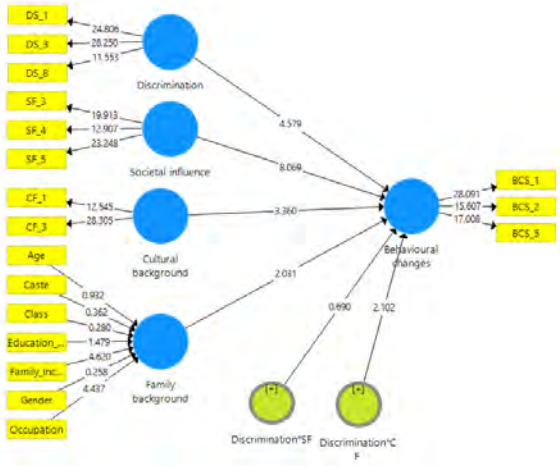
*** $p < 0.001$, * $p < 0.05$

The PLS-SEM allows for further analysis through bootstrapping (see Table 5) in identifying the direct relationships between the variables. Based on PLS-SEM procedure of direct effects, it is established that the direct effects (cultural background → students' behavioural changes: $\beta = 0.18$, $t = 3.39$; societal influence → students' behavioural changes: $\beta = 0.43$, $t = 7.86$; family background → students' behavioural changes: $\beta = 0.13$, $t = 2.01$) were significant.

Table 5
Bootstrapping Direct Effects at 95% Confidence Intervals (CIs)

	Sample		T Statistics	P Values
	β	Standard Deviation (STDEV)		
Cultural background -> Behavioural changes	0.18	0.05	3.39	0.00
Family background -> Behavioural changes	0.13	0.05	2.01	0.04
Societal influence -> Behavioural changes	0.43	0.05	7.86	0.00

Figure 2
SEM Model for the Study



Moderating Effects

The role of cultural background and societal influence as moderators between perceived discrimination of students was their behavioural changes were tested (Table 6). An effect size of predictors in each case was assessed following Cohen's f^2 criteria. The results demonstrate that the second case and third case in which direct and the moderating (cultural background) interaction effects were created, reported a higher effect size in comparison to other scenarios. The results indicated an f^2 value of 0.12 reflecting a small effect size (Cohen, 1988); thereby partially confirming hypothesis H2.

Table 6
Moderation Effects

State of model testing	Effect size
Model without cultural background	0.031
Model without societal influence	0.025
Model with cultural background as a direct effect	0.074
Model with societal influence as a direct effect	0.287
Model with cultural background as a moderator	0.121
Model with societal influence as a moderator	0.003

Discussion

While research has consistently focused on discrimination based on caste and creed, less is known about specific discrimination sources in different settings, including institutional contexts. The present study focused specifically on perceived teacher discrimination. The present research analysed the effects of teachers' perceived discrimination on students' behavioural changes when controlling for family background. Besides, this study examined whether cultural background and societal influence moderated the effects of school-based discrimination on students' behavioural changes. This study focused on the Indian sample to understand how perceived teacher discrimination based on caste, creed and financial background of students may be associated with their behavioural changes.

In the present study, specifically, the empirical evidence that perceived discrimination by teachers (0.29) significantly affects students' behavioural changes suggests that higher discrimination strengthens behavioural changes in students. This finding is indicative of declining in students' interest to listen in the classes as a result of discrimination. Alfaro et al. (2009) proposed similar arguments by stating that students who suffered discrimination by teachers showed little interest in their studies, curiosity and perseverance. Additionally, discrimination also significantly affects students' interest to obey rules in the classroom. Smalls et al. (2007) established that discriminated students possibly exhibit truant behaviour at school. Discriminating behaviour is intolerable, even among educated professionals, and adversely affects student outcomes (Borrazzo, 2005; Haider and Hussain, 2014). Here, this finding contributes to the previous studies which reported that perceived discrimination by teachers is a basic determinant of behavioural changes in students (Huynh and Fuligni 2010; Jain and Narayan, 2011; Dupper et al., 2015). The exclusion and discrimination based on caste were also highlighted by Dostie and Jayaraman (2006). This kind of discrimination was also pointed out by Ramachandran and Naorem (2013) who highlighted segregated seating arrangements of backward and forward caste students in a classroom as an example of perceived teacher discrimination. Moreover, Kumar (2016) claimed that the humiliation and discrimination in schools based on the caste of the students was a reality in the Indian education system. Additionally, girls in the backward caste were considered as less fit to study (Kurian, 2015). Murray-Harvey and Slee (2007) and Stephan and Stephan (2013) argued that factors that profoundly affect students' psychological behaviour and learning originate from the discriminating attitude of teachers. However, the present finding is different from the findings by Bibi and Karim (2015) and Ali et al. (2019) where it was observed that students' learning outcomes and psychology were not influenced by teachers' perceived discrimination.

Moreover, regarding perceived teacher discrimination, this study empirically established that the association between students' behavioural outcomes and perceived discrimination was controlled by cultural background in a significant, but negative manner. This finding established that the effects of teachers' perceived discrimination on students' behaviour would be mitigated by cultural background. This outcome is consistent with Banerjee et al. (2018), who posited that the influence of perceived discrimination on academic performances of students was weakened by cultural socialization. The cultural background has been associated with better performance of school students. Assari and Caldwell (2018) reported that cultural socialization diminished the risk for greater behavioural changes in students due to experiencing discrimination in the classroom by teachers. The authors argued that individual and environmental intersection is required to comprehend the role of discrimination on students' behavioural changes (Chavous et al., 2008). Theoretical perspectives on socialization might facilitate our understanding of why cultural background may matter in the influences of

perceived discrimination on students' developmental results (e.g., perceived teacher discrimination on students' behavioural changes). Cultural background shapes socialization and the different levels of teacher-student interaction (Brown and Harris, 2012). School students receive negative perceptions through caste- and creed-based discrimination, but they receive positive perceptions through cultural background, resulting in positive outcomes (Banerjee et al., 2018). Previous studies suggest that family background or socioeconomic status (Assari and Caldwell, 2017; Hudson et al., 2012) and cultural background (Assari et al., 2015; Beatty Moody et al., 2016) change experience and sensitivity to perceived discrimination. Interpretation of unclear or arguable situations depends on various factors including cultural identity that shapes the prominence of culture in gradual encounters (Sellers et al., 2006). However, the present finding is different from previous studies that found no controlling consequence of cultural background in the association between students' academic outcomes and teachers' caste- and creed-based perceived discrimination (Neblett et al., 2006). Furthermore, the present results for societal influence was not significant, indicating that societal influence was less of a concern in the present sample. This could be because of a particular sample of the present dataset, where information was gathered from respondents of the same locality and ethnicity.

Conclusion

With the survey data collected from class 8 to class 10 students of rural and urban schools in Krishnagiri district of Tamil Nadu, India, the present study explored the effect of perceived discrimination by teachers based on students' caste, creed and financial background on their behavioural changes how this effect is strengthened in the presence of cultural background and societal influence. Overall, the present study revealed that perceived teacher discrimination significantly leads to negative behavioural changes in students when controlling for family background. Moreover, the present study identified the moderating effect of cultural background on the direct association between students' behavioural changes and teachers' perceived discrimination.

Implications

The present study offers valuable insights for theoretical implications and practical implications. The present study adds to the existing literature concerning the negative effect of perceived teacher discrimination on behavioural changes in school students. Despite prior studies having examined the conflict-inducing approach of teachers based on students' religion, socio-economic status, and gender (Neblett et al., 2006), few studies have analysed the discriminating approach of teachers towards behavioural changes in students with regards to their cultural background, societal influence and family background (Ali et al., 2019). The present study provides evidence that cultural background may buffer the negative behavioural outcomes for school students as a result of perceived teacher discrimination, suggesting that cultural socialization may balance the effects of discrimination in the school context. Besides, the present results indicate that family background may be associated with behavioural changes in students due to perceived discrimination. Schools might include educational practices with a focus on culture to mitigate discriminating behaviour among students and foster better psychological and academic outcomes.

Recommendations

Since the present findings reported that perceived teacher discrimination adversely affects students' behavioural changes, school authorities should emphasize sources that may lead to discriminating behaviour of teachers. Stricter actions towards intolerance to discrimination in

terms of termination, suspension, or demotion should be effective to regulate these sources. Several interventions should be implemented by school authorities to alleviate perceived teacher discrimination. Schools should prioritize a diverse workforce of teachers. Finally, training programs should be conducted to educate teachers to mitigate blunt reactions and better handle discriminating attitudes. Repeated mistreatment is considered to emotionally affect students (Baldwin and Baldwin, 1986). Although eliminating negative interactions between teachers and students seems unrealistic, bias in teachers' approach towards students could be mitigated.

Limitations and Future Research Directives

The present study emphasises on school-based students' perception of teacher discrimination and their views on their behavioural changes. Future research should consider the perceptions of teachers and parents to provide in-depth insights for understanding the impact of school-based perceived discrimination on students' behavioural outcomes and decrease the probability of bias in self-perceived response. In addition, the present study did not control for organizational and personal factors that could be a reason for perceived teacher discrimination. Future studies may emphasize additional factors, like institutional strategies, which tend to control the association between students' behavioural changes and teachers' perceived discrimination. This, in turn, would enable to comprehend framing institutional policies effective in regulating teachers' behaviour and attitude. Moreover, the cross-sectional aspect restricts the generalizability of findings as it provides an understanding of what is currently happening. Therefore, longitudinal studies should be conducted to understand the relationship between perceived teacher discrimination based on caste, creed and financial background and students' behavioural changes. Efforts must be made to understand how such a relationship is buffered by cultural-societal intersection and family background through different phases of the school level. A longitudinal study design on perceived discrimination might aid in understanding the nature and influence of the moderating factors.

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The Effects of Learning Stations on Socioeconomically Disadvantaged Students' Achievement and Self-Regulated Learning

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Abstract

The aim of this study was to investigate the effects of learning station strategies on developing academic achievement and self-regulated learning among middle school students of low socioeconomic status. The sample group consisted of 68 female Saudi students. We applied a quasi-experimental design with an experimental and control group and a pretest and posttest. We examined the correlation between academic achievement and self-regulated learning. The data collection instruments included an academic achievement test and self-regulated learning questionnaire. The results revealed a statistically significant difference between the mean scores of both instruments in favor of the experimental group. Additionally, there was a positive relationship between development of academic achievement and self-regulated learning among the students for the experimental group. The study's findings suggest that the learning stations created a dynamic classroom, which prompted students to engage in self-regulatory behaviors and develop their knowledge and understanding.

Keywords: learning stations, achievement, self-regulated learning, low socioeconomic status

Considering the importance of sustainable education for the future of all students, including students who come from socioeconomically disadvantaged backgrounds, investigating instructional strategies that may support and amplify their learning experiences becomes a necessary intervention to address their educational needs. Additionally, students of low socioeconomic status are often identified as students with low educational achievement and from low-income households who are at risk of inadequate academic preparation and weak parental or family support (Dietrichson et al., 2017; Rubin et al., 2014). As such, strengthening the focus on teaching quality and students' learning abilities becomes central to providing students from socioeconomically disadvantaged backgrounds with appropriate and sustainable education for their future.

Previous research has established that students of low socioeconomic status, on average, have lower academic achievement levels than students of high socioeconomic status (e.g., Acar, 2019; Hernstein & Murray, 1994; Hertert & Teague, 2003). Although it is unrealistic to believe that school-based strategies alone can eliminate disparities in academic achievement between socioeconomically advantaged and disadvantaged students, teachers with effective instructional strategies can help narrow the achievement gap (Reardon, 2013). Many studies have found that the role of teachers is a key factor in making a significant difference in students' achievement. For example, Haycock (1998) stressed that teachers have a more powerful influence on students' achievement than students' socioeconomic status and parent education. Similarly, Marzano et al. (2001) indicated that even in low-performing schools, teachers could affect achievement in students and help them attain their fullest capacities. Collectively, students may face socioeconomic and academic challenges during their educational journey, but effective teaching strategies can address their achievement needs (Wronowski, 2017).

Furthermore, existing research recognizes the critical role that self-regulated learning plays in students' academic achievement. Drawn from social cognitive theory, self-regulated learning mainly involves cognitive strategies, metacognitive strategies, and resource-management strategies, which are known within self-regulation literature to support students' learning and academic achievement (e.g., Graham & Harris, 2009; Zimmerman & Schunk, 2011). Additionally, adept self-regulated learning is correlated with satisfactory levels of achievement, and high-performing students implement self-regulated learning more often and more successfully than their lower-performing peers (Dent & Koenka, 2016).

However, a crucial question is what instructional strategies should be targeted by teachers and encouraged by educational decision makers that have the potential to narrow the achievement gap and foster self-regulated learning among students from socioeconomically disadvantaged backgrounds. Nevertheless, adopting an instructional strategy to address academic achievement is a decisive and challenging decision because not all established instructional strategies maximize achievement levels, and they may unintentionally increase the achievement gap (Atlay et al., 2019). Moreover, learning stations (also known as stations or scientific stations) are part of an instructional strategy that provides an alternative way to guide instruction for diverse learners, differentiate instruction, and foster a positive learning environment (Tomlinson, 2014). Learning stations are essentially different physical locations in the classroom where students work on various tasks simultaneously (Jones, 2007). Several sources provide key characteristics that support the selection of learning stations as an instructional strategy to use with struggling students from socioeconomically disadvantaged backgrounds (e.g., Aydogmus & Senturk, 2019; Jones, 2007; Tomlinson, 2014). One main characteristic is that the teacher can creatively design and methodically build each station to address the students' academic needs. Learning stations also encourage small group instruction

and facilitate interactions among peers, which decreases student to teacher ratios. Therefore, students are in charge of executing their own problem-solving and consequent learning, which builds students' interest in the content area and allows for more inquiry and discovery. Additionally, rotating students through learning stations that address their academic weaknesses can minimize their frustration. As such, students adjust or modify their learning strategies based on their current station and the intended goal, which may influence them to practice self-regulated learning.

Although cooperative learning, feedback, and tutoring seem like promising approaches, providing the most suitable teaching interventions for students from socioeconomically disadvantaged households is still a conundrum (Dietrichson et al., 2017). Therefore, the purpose of the study is to investigate the effects of learning station utilization on the development of academic achievement and self-regulated learning among middle school students from socioeconomically disadvantaged backgrounds. The following questions guided the current study:

1. How effective is the learning stations strategy in the development of academic achievement among second-year middle school students?
2. How effective is the learning stations strategy in the development of self-regulated learning among second-year middle school students?
3. What is the relationship between academic achievement and self-regulated learning among second-year middle school students?

Literature Review

Learning Stations

Learning stations are part of an instructional strategy that supports differentiation (Tomlinson, 2014). Learning stations are distinguished locations (e.g., distinguished by signs, symbols, or colors) in the classroom where groups of students collaboratively work on different tasks simultaneously to learn content and develop skills related to a topic. The groups rotate from station to station until each group of students has completed all the tasks. Additionally, designing learning stations and setting up the classroom can take different forms. Two to four learning stations are ideal for most classrooms, and student groups should range from four to six members. Furthermore, each learning station is recommended to have simple instructions that students can quickly read and spend approximately 10–15 minutes accomplishing at each learning station (Jarrett, 2010). Moreover, there are varying arrangements for learning stations that are premeditated based on the nature of the subject, available class time, and student's grade level, such as exploration stations, reading stations, yes-or-no stations, visual stations, acting stations, electronic stations, and art stations.

In the context of middle school education, the learning stations strategy has been examined in several subject areas. For example, Suoed and Taha (2020) investigated the effect of using learning stations on student achievement in a computer course. Suoed and Taha employed a quasi-experimental design using 72 second-year male middle school students who were divided into an experimental and control group. This study included four learning stations: an electronic station, exploration station, reading station, and visual station. Using a multiple-choice achievement test, the results revealed a significant difference between the mean scores of both groups in favor of the experimental group. The researchers elaborated that the learning stations strategy created a positive learning environment for the students to engage with each other, ask questions, and actively interact with the lesson and its materials.

Allihaibi (2015) conducted a study that revealed the impact of learning stations on developing achievement and positive attitudes toward the subject of physics. The sample was composed of 60 second-year male middle school students who were divided equally into the experimental group and in the control group. This study used three learning stations: an exploration station, a reading station, and a yes-or-no station. The researchers used a multiple-choice achievement test and a three-point Likert scale to gauge participants' attitudes toward physics and collect data from them. The results showed significant differences in favor of the experimental group between the mean scores in the post-application of the achievement test and the attitude toward the physics questionnaire. The researchers concluded that the learning stations provided students with an opportunity to constructively build their own knowledge by gradually developing their understanding of physics at each station. Additionally, the researchers indicated that the learning stations allowed students to engage in meaningful science discourse that may have influenced their positive attitudes toward physics.

Another example is Al-Hafidh's (2020) study that aimed to explore the effect of learning stations on developing deductive thinking in science among first-year middle school students. The sample was composed of 65 students divided into an experimental (30 students) and control (35 students) group. This study had four learning stations: an electronic station, exploratory station, imaginary station, reading station, audio station, and a yes-or-no station. The researchers developed a 20-item deductive reasoning test. The findings showed significant differences between the mean scores of both groups in the post-application of the deductive reasoning test in favor of the experimental group. The researcher stressed that the learning station approach allowed students to interact with various educational stations that helped them construct their own knowledge and work with their peers to create a sound cognitive structure. Overall, these studies highlight that the number and type of learning stations should be chosen based on the nature of the subject and content being taught. Additionally, hardly any studies have investigated the effects of learning stations on developing academic achievement and self-regulated learning among middle school students from socioeconomically disadvantaged backgrounds.

Self-Regulated Learning

Self-regulated learning can be defined as "self-generated thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmerman, 2000, p. 14). As such, self-regulated learning centers around the individual's active and constructive processes of planning, monitoring, implementing, and reflecting to attain academic achievement (Pintrich, 2000). Additionally, self-regulated learners are active agents in their learning process by planning, setting goals, and engaging in strategies to enhance their progress toward academic achievement (Zimmerman, 1986). Furthermore, self-regulated learning strategies are systematically directed toward the achievement of learning goals. As such, self-regulation is a multidimensional construct that can be categorized into the following strategies: cognitive, metacognitive, and resource management (Pintrich et al., 1991; Pintrich, 2004; Zimmerman, 1990). Based on the studies mentioned above, we used the following definitions of self-regulated learning in the current study. *Cognitive strategies* refer to methods and techniques the learner uses to integrate new knowledge with prior knowledge, which also involves contribution strategies that help them recall, elaborate on, and organize ideas. *Metacognitive strategies* refer to the learner's self-awareness about their cognitive processes and the strategies they employ to set goals and monitor, plan, and regulate their learning. *Resource management* refers to the learner's ability to manage and control their learning environment to achieve their goals using tools such as time and effort, management, help-seeking, and peer-learning. Overall, many studies have highlighted that self-regulated students

adopt strategies that align with the cognitive demands of tasks and activities to better reach their goals of high academic achievement (e.g., Broekkamp & Van Hout-Wolters, 2007; Komarraju & Nadler, 2013).

Methodology and Methods

Population and Sample

General education in Saudi Arabia consists of three stages: six years in elementary school, three years in middle school, and three years in high school. The population in this study was composed of second-year middle school female students from public middle schools in the city of Khobar, Saudi Arabia. Of the 20 public middle schools in Khobar, two schools contain students of low socioeconomic status due to low income and education achievement in their family's households. Random sampling was not possible because selection of the middle schools had to be disclosed to the Department of Planning and Development in the Eastern Province Branch of the Ministry of Education so that ethical approval could be obtained. Thus, we purposefully approached one of the two middle schools that were willing to participate in the study.

Research Design

A quasi-experimental design with an experimental and control group and a pretest and posttest was used to investigate the study's research questions. The chosen middle school consisted of five second-year classes. Two classes were randomly selected. Thirty-three students comprised the experimental group, and 35 students comprised the control group. The experimental group received the pretest, the treatment (learning stations), and the posttest. The control group received a pretest followed by a posttest. All students in both groups were of low socioeconomic status (i.e., from households with low income and educational achievement). Additionally, there were no differences between the two groups regarding the following extraneous variables: gender, age, educational content, or previous academic achievement. Furthermore, the subject of science was chosen because both the school's principal and academic counselor indicated that science was a challenging subject for their second-year students, and the students were at risk of having a significant achievement gap in science. Furthermore, the following two units from the science textbook were used for this study: "Support, Locomotion, and Response" and "Reproduction and Development." The first unit included two lessons, which were "Skin and Muscles" and "The Skeleton and Nervous Systems." The second unit included two lessons, which were "The Endocrine and Reproductive Systems" and "Stages of Human Life."

Research Tools

The development of the academic achievement test. The academic achievement test was developed to measure students' level of understanding related to the "Support, Locomotion, and Response" unit and the "Reproduction and Development" unit (see Appendix A). Together with an expert teacher from the middle school, we examined several resources when drafting the academic achievement test, which included the learning objectives of each lesson, the scientific concepts in each unit, previous academic achievement tests carried out in the school, and samples of academic achievement tests supplied by the Saudi Education and Training Evaluation Commission. The academic achievement test included 28 multiple-choice questions designed to test different cognitive levels – remembering, understanding, applying, and analyzing (Anderson & Krathwohl, 2001).

Moreover, content validity was established by having the test reviewed by two curriculum and instruction professors at the researchers' university. They were asked to review the test's degree of representation in the content, the clarity of the questions, the suitability of the alternatives for each of the questions, and the suitability of the questions for the corresponding cognitive level and give any other necessary feedback. Accordingly, changes were made based on the reviewers' feedback, which included minor wording editing and the cognitive difficulty of some questions. Then, the researchers piloted the test on 58 third-year male middle school students who were not participants in the study. The internal consistency was assessed by calculating Pearson correlation coefficients between each question and the total mark for the cognitive level under which the question falls, as shown in the following table:

Table 1
Pearson Correlation Coefficients for the Academic Achievement Test

Remember		Understand		Apply		Analyze	
Pearson Correlation	Question	Pearson Correlation	Question	Pearson Correlation	Question	Pearson Correlation	Question
0.693*	1	0.630*	3	0.782*	2	0.749*	5
0.732*	7	0.559*	9	0.862*	4	0.813*	6
0.580*	8	0.683*	10	0.724*	12	0.665*	13
0.744*	14	0.584*	18	0.854*	28	0.629*	11
0.661*	15	0.614*	19			0.762*	23
0.595*	16	0.519*	20			0.641*	24
0.503*	17	0.638*	21				
0.579*	25	0.660*	22				
0.727*	27	0.629*	26				

* Correlation is significant at the 0.01 level.

Table 1 shows that all correlation coefficients between each question and the total mark for a cognitive level under which the question falls are statistically significant at 0.01, which means that the academic achievement demonstrated internal consistency. Additionally, the internal consistency was calculated for each cognitive level individually with overall test scores. The value of coefficients for remembering, understanding, applying, and analyzing were 0.722, 0.665, 0.603, and 0.648, respectively. Thus, all coefficients were statistically significant correlations at 0.01, indicating an existing strong internal consistency of the test. Furthermore, the reliability of the test was verified through two methods Cronbach's alpha and split-half reliability (Spearman–Brown). We calculated the results of both methods to be 0.865 and 0.867, respectively. This indicates high reliability and thus confirms the appropriateness of the test for application.

Furthermore, the difficulty and discrimination coefficients were examined for each question. The difficulty coefficients ranged from 0.38 to 0.76 with an average of 0.58, and the discrimination coefficients ranged from 0.31 to 0.69 with an average of 0.54. Accordingly, the academic achievement questions have appropriate difficulty and discrimination coefficients, and thus they are considered suitable. Finally, the academic achievement test took approximately 40 minutes to complete.

Development of the self-regulated learning questionnaire. The self-regulated-learning questionnaire consisted of the following three components of learning strategies, each of which

includes three skills as follows: (1) cognitive strategies: recalling information, organizing, and elaborating; (2) metacognitive strategies: planning, regulating, and monitoring; and (3) resource management strategies: time managing, peer learning, and help-seeking. These specific self-regulated-learning strategies and associated skills were chosen because of their suitability for the abilities of the study participants, and the items were taken from literature in the context of middle school education (e.g., Al-Shammari, 2019; Muhammad, 2017). The questionnaire consisted of 36 statements, with each skill having four statements. Negative phrases were considered in the development of the questionnaire, and negative statements were included in items 8, 16, and 36. The questionnaire included a three-point Likert scale: rarely (score 1), sometimes (score 2), and always (score 3). Two experts in educational psychology reviewed the questionnaire to confirm content validity. They were asked to evaluate each item for clarity, readability, and relevance. All necessary changes recommended by the reviewers were addressed, which mostly involved wording and minor grammatical changes to avoid misinterpretation and ensure clarity. Then, the questionnaire was pilot tested on 58 middle school students who were not participants in the study. The internal consistency was assessed by calculating Pearson correlation coefficients (refer to Table 2).

Table 2
Pearson Correlation Coefficients for the Self-Regulated Learning Questionnaire

Recalling information		Organizing		Elaborating	
No.	Pearson Correlation	No.	Pearson Correlation	No.	Pearson Correlation
1	0.803*	5	0.738*	9	0.783*
2	0.769*	6	0.758*	10	0.843*
3	0.792*	7	0.837*	11	0.827*
4	0.749*	8	0.733*	12	0.775*
Planning		**Regulating**		**Monitoring**	
No.	Pearson Correlation	No.	Pearson Correlation	No.	Pearson Correlation
13	0.778*	17	0.837*	21	0.866*
14	0.805*	18	0.775*	22	0.815*
15	0.798*	19	0.773*	23	0.828*
16	0.774*	20	0.859*	24	0.842*
Time managing		**Peer learning**		**Help-seeking**	
No.	Pearson Correlation	No.	Pearson Correlation	No.	Pearson Correlation
25	0.882*	29	0.804*	33	0.811*
26	0.768*	30	0.796*	34	0.747*
27	0.847*	31	0.784*	35	0.802*
28	0.805*	32	0.825*	36	0.826*

* Correlation is significant at the 0.01 level.

Table 2 shows that all correlation coefficients between each statement and the total mark for the habit of mind under which the statements fall are statistically significant at 0.01 and 0.05, indicating that the questionnaire is internally consistent. Additionally, we calculated the internal consistency of each skill with overall questionnaire scores. The values of the coefficients were as follows: recalling information (0.646), organizing (0.589), elaborating (0.752), planning (0.661), regulating (0.679), monitoring (0.699), time managing (0.662), peer

learning (0.768), and help-seeking (0.575). The values of the coefficients were statistically significant at 0.01. The reliability of the questionnaire was tested by using Cronbach's alpha, which was calculated as 0.925, and split-half reliability (Spearman–Brown), which was estimated as 0.872, both of which are acceptable degrees of reliability. The questionnaire took approximately 20 minutes to complete (see Appendix).

Teachers' guide to learning stations. In Saudi middle schools, science is generally taught four times per week, and each class is 45 minutes long. In this study, we used three learning stations: an exploration station, visual station, and reading station. At the exploration station, students were engaged in hands-on activities where they carried out and explored a specific concept from their lesson. Then, students moved to the visual station, where a computer screen was set up for them to watch a video clip related to the lesson content. Finally, the students proceeded to the reading station, where they interacted with a scientific text related to the lesson. At this station, the students linked and extracted information included in the reading text with previous knowledge gained from the exploration and visual stations. They also engaged in reading activities, such as identifying main ideas, underlining key concepts, and expressing meaning in their own words. At each station, the students were asked to take notes and answer questions on the accompanying worksheets.

Furthermore, we developed a teacher's guide to learning stations for the "Support, Locomotion, and Response" and "Reproduction and Development" units. The guide includes the following sections: introduction to learning stations strategy, lesson objectives, scientific concepts included in each lesson, lesson plans according to learning stations, using learning stations in larger classes, and worksheets for each learning station. The teacher's guide was reviewed by two science education professors and by an experienced middle school teacher. Necessary changes were made upon receiving their written feedback and verbal suggestions.

Procedures

Before carrying out the study, we sought approval from the Eastern Province Office of the Ministry of Education, which issued a letter to the targeted middle school allowing us to conduct the study with second-year female middle school students. All participating students, their parents, and the classroom teacher agreed to voluntarily participate in the study. Moreover, we applied descriptive statistics to analyze the data of this study, which included calculating the mean, standard deviation (SD), and degrees of freedom (df) values for both the academic achievement test and self-regulated learning questionnaire. Additionally, we used Pearson correlation coefficients to investigate the connection between the two dependent variables. Initially, the normality in each group was estimated using a Shapiro–Wilk's test, the results of which showed that each had nonsignificant readings and followed a normal distribution. As a result, we employed inferential statistics, which included a *t*-test for independent samples to identify differences between the experimental and control groups in developing the academic achievement test and self-regulated learning questionnaire and the eta-squared ($\eta 2$) coefficient to calculate the effects of the size of learning stations on academic achievement and self-regulated learning.

Furthermore, we administered the pretest using the test and questionnaire on the chosen experimental and control group to verify their equivalence. We examined the equivalence of the two groups by using an independent sample *t*-test. Table 3 illustrates the results.

Table 3
T-Test Results for the Pretest Academic Achievement Test

Group	N	Mean	SD	df	T value	Significance level
Experimental	33	7.39	2.16	67	0.597	0.553
Control	35	7.71	2.26			

Table 4
T-Test Results for the Pretest Self-Regulated Learning Questionnaire

Group	N	Mean	SD	df	T value	Significance level
Experimental	33	56.52	7.55	67	0.944	0.348
Control	35	54.69	8.37			

Tables 3 and 4 show that the test significance level is above 0.05, which indicates that there are no statistically significant differences between the experimental and control groups. Therefore, there is equivalence between both groups. Finally, after the four-week treatment was completed, we conducted the posttest by using both instruments for the experimental and control groups.

Results

Research Question One

To answer the first research question, we tested the following hypothesis: "There are no statistically significant differences at ($\alpha \leq 0.05$) between the posttest mean scores of the experimental and control groups in the academic achievement test." Table 5 shows the summary statistics for testing this hypothesis, which corresponds to the first research question.

Table 5
Posttest Summary Statistics for the Academic Achievement Test

Group	N	Mean	SD	*df*	*T*-test	η^2	Significance level
Experimental	33	25.36	1.85	67	11.44	0.665	0.00
Control	35	18.17	3.13				

Table 5 reveals that the significance level is less than 0.05. Therefore, the null hypothesis is rejected, which means that the use of learning stations made a difference in the posttest in favor of the experimental group. Additionally, eta squared ($\eta 2$) is calculated at 0.665, revealing a large effect size. This indicates that learning stations had a significant and effective impact on the students' performance on the academic achievement test.

Research Question Two

To answer the second research question, we tested the following hypothesis: "There are no statistically significant differences at ($\alpha \leq 0.05$) between the posttest mean scores of the experimental and control groups in the self-regulated learning questionnaire." Table 6 shows the summary statistics for testing this hypothesis, which corresponds to the second research question.

Table 6
Posttest Summary Statistics for the Self-Regulated Learning Questionnaire

Group	N	Mean	SD	*df*	*T*-test	η^2	Significance level
Experimental	33	100.12	5.59	67	17.81	0.828	0.00
Control	35	65.77	9.65				

Table 6 shows that the significance level is less than 0.05. Therefore, the null hypothesis is rejected, which means that the use of learning stations made a difference in the posttest in favor of the experimental group. Additionally, eta squared (η2) is calculated at 0.828, which is a large effect size. This indicates that learning stations had a significant and effective impact on the development of students' self-regulated learning.

Research Question Three
To answer the third research question, we tested the following hypothesis: "There are no statistically significant correlations at ($\alpha \leq 0.05$) between academic achievement and self-regulated learning among middle-school students." Table 7 shows the summary statistics for testing the third hypothesis, which corresponds to the third research question.

Table 7
Pearson's Correlation Coefficients Between Academic Achievement and Self-Regulated Learning

Group	N	Pearson Correlation	Significance level
Experimental	33	0.534	0.001
Control	35	0.125	0.474

Table 7 shows that the correlation coefficient in the case of the experimental group reached 0.534, which is greater than that of the control group 0.125. The significance level for the experimental group is less than 0.05; therefore, the null hypothesis is rejected. Additionally, there is a positive correlation for the experimental group between students' achievement on the test and their development of self-regulated learning when using learning stations.

Discussion

Regarding the learning stations strategy making a difference in the post academic achievement test in favor of the experimental group, a possible explanation could be the collective effect of the three learning stations on the students' achievement on the test. In the exploration station, students were given the opportunity to learn through their own interactions with tangible experiences. The activities in this station stimulated students' curiosity, established a desire to learn, and raised questions. As students progressed, spontaneous processes of exploring new ideas were triggered to address questions or problems they encountered during the explanation activities. Ocak (2010) stressed that exploration stations are active and dynamic, which provides students with the opportunities for experimentation to develop their personal knowledge and meaning.

Furthermore, considerable empirical evidence reveals that students of low socioeconomic status are more likely to have poor reading and writing skills (e.g., Ming & Powell 2010;

Wamba, 2010). As such, the visual station may have helped the students who are weaker in these areas by maximizing their cognitive and emotional awareness. Additionally, the visual station worked to bring scientific concepts of the lessons closer to the students' minds and helped to embody verbal meanings that the students could easily perceive by watching the video clips. Berk (2009) explained how educational video clips are processed in students' brains. Berk concluded that educational video clips have the potential to tap into students' core intelligence and interpersonal emotions. Similarly, Choudhury (2011) indicated that video clips could support students' retentive memory and help them recall what was taught in class. Moreover, the reading station set the final stage to address the concepts of the lesson. This station provided the students with more formal instruction by having them read texts that were oriented toward the lessons' concepts. Because the students engaged in both experimentation and visual activities, the reading station encouraged an active search for meaning rather than mechanical memorization and a lack of meaningful connection when learning the scientific concepts. Overall, comparisons of our findings with those of other studies confirm that using learning stations significantly affects students' academic achievement levels compared to using conventional educational methods (Al-Hafidh, 2020; Allihaibi, 2015; Suoed & Taha, 2020).

With respect to the learning stations making a difference in the post-self-regulated-learning questionnaire in favor of the experimental group, a possible explanation is that each learning station created a cooperative and engaging context for solving problems and fostered the development of students' self-regulated learning. The exploration station's activities emphasized the continuity of self-learning and pushed the student toward researching and employing their ideas in problem-solving, which enhanced their self-regulated learning skills. Additionally, the exploratory nature of the learning station's activities may have assisted the students in remembering and retrieving information, which in turn facilitated the process of retaining and organizing the lesson's content and concepts in the student's cognitive structure to improve long-term retrieval. Previous researchers indicated that practicing activities that allow students to adopt cognitive strategies (i.e., planning, elaboration, and organization) deepens their engagement with the lesson content, which aids them in remembering and retrieving information (Pintrich, 2003).

The learning stations also provided the students with the opportunity to employ metacognitive strategies. Across the stations, students took responsibility when dealing with the activities and identifying their strengths and weaknesses while learning, which prompted them to employ metacognitive strategies such as planning, regulating, and monitoring their learning. Additionally, with each station having a specific time limit, students would search for effective ways to increase their awareness and understanding at each station using self-regulated learning (i.e., resource-management). Collectively, the study's results suggest that the systematic and exploratory nature of the learning station provided the students with a greater awareness of their self-regulated learning skills. Additionally, the study's findings align with those of previous studies, which indicated that students with varying backgrounds and abilities could develop self-regulated learning strategies (Lichtinger & Kaplan, 2011; Nilson, 2013).
Furthermore, using the learning stations, we were able to show a positive correlation between academic achievement and self-regulated learning. Several studies indicated that students of low socioeconomic status face unfavorable odds in attaining academic success and narrowing the achievement gap (Johnson et al., 2011; Sirin, 2005; Thomson, 2018). Additionally, classroom context has been recognized as a significant contributor to students' development of self-regulated learning (e.g., Paris & Paris, 2001; Turner & Meyer, 2000). As such, a possible explanation for this result may be that the learning stations created a dynamic classroom context where students in each station were required to be active learners by working toward

successfully completing the station's activity (e.g., the station's worksheets), as well as deliberate planning and monitoring the accomplishment of the station's task. The instructional settings of the learning station allowed students to deepen and manipulate the associated content of the lessons. That is, each station played a role in encouraging students to employ various cognitive approaches to acquire the content knowledge of the lesson and develop processes by which they could exercise control over their thinking, affect, and behavior (i.e., self-regulated learning).

Conclusion

The purpose of this study was to investigate the effects of learning stations on developing academic achievement and self-regulated learning among students from socioeconomically disadvantaged backgrounds. Results from the current study suggest that teachers can use learning stations to benefit students of low socioeconomic status and develop their academic achievement and self-regulated learning. The academic achievement growth seen in the experimental group might be explained by considering the multiple opportunities students had to address the content of the lesson at each station (i.e., exploration, visual, and reading stations). The continued exposure to the lesson content and information may have been sufficient for acquiring knowledge. Furthermore, it is important to note that classroom activities that are easy to complete might make students lose interest, and activities that are too challenging are likely to make them feel frustrated or lost (Gilliam, 2015). As such, findings from the current study suggest that the learning stations created a classroom context that offered a reasonable amount of challenge, which prompted students to engage in self-regulatory behaviors, such as organizing, monitoring, peer-learning, time-managing, and help-seeking.

Our purposeful sampling may be viewed as a potential limitation. However, the Saudi educational system is centralized, so it is likely that little variation in the results will be present when similar studies are conducted in the region. Moreover, further research could explore students' attitudes toward the use of learning stations strategy and the use of observation sheets to investigate pre-service or in-service teachers' skills when using the strategy. Teacher education programs and professional development workshops should include experiences and instructional strategies that adequately meet the needs of students of low socioeconomic status. Considering the importance of sustainable education in improving the futures of students of low socioeconomic status, further research is needed to evaluate other instructional strategies that have the potential to narrow the achievement gap and develop students' learning abilities.

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Appendix A: Academic Achievement Test (Example)

1. The chemical produced by epidermis cells that protects the skin from the sun's rays and gives it its color is called: (*Remember*)

a. Hemoglobin
b. Hormones
c. Melanin
d. Sweat glands

6. Ligaments differ in their function from the tendon in that they: (*Understand*)

a. Connect the bones together in the joint
b. Move the limb bones
c. Move cartilage
d. Help the spongy bone to move

9. The structure and basic function in the nervous system that conveys nerve impulses in one direction is called: (*Apply*)

a. Neuron
b. Synaptic cleft
c. Spinal cord
d. Brain

12. Ahmed fell while playing football. The doctor diagnosed him with a knee joint injury. This joint type is: (*Analyze*)

a. Hinge
b. Axial
c. Spherical
d. Sliding

Appendix B: Self-Regulated Learning Questionnaire

1. I repeat difficult concepts when studying science until I memorize them.
2. I recite important concepts for myself many times so that I will not forget them.
3. I read definitions aloud several times so that they stick in my mind.
4. I write down important points several times while studying so that I can remember them.
5. I use symbols and shapes to help me organize my studies in science.
6. I create drawings and maps of the concepts in the lessons.
7. I compare scientific concepts when I study science topics.
8. I lack the ability to organize new information into tables and charts.
9. I relate new ideas to what I previously learned while studying science.
10. I underline important phrases to facilitate understanding and review.
11. I summarize the most important things I learned in the lesson in simple paragraphs.
12. I create a hierarchy of lesson ideas.
13. I set goals for myself before I start studying.
14. I make a schedule of my daily activities.
15. I create an action plan before or during my study.
16. I study directly without prioritizing, remembering, or revising lessons.
17. I ask myself questions while studying science to assess my understanding.
18. I compare my answers with those of the teacher in the classroom.
19. I compare my academic progress with that of my classmates.

20. I can spot my mistakes when doing science activities.
21. I mark points that I did not understand while studying.
22. I follow my way of doing the homework.
23. I spot the parts where I made mistakes for review.
24. When I study, I pause from time to time to make sure I understand the material.
25. I organize my time when studying science lessons.
26. I complete my science assignments on time.
27. Before I start studying, I specify times to rest and eat.
28. I prepare for the test well in advance.
29. I exchange notes with my classmates while learning.
30. I enjoy practicing teamwork with my classmates to help one another.
31. When I understand the lesson well, I explain it to my classmates.
32. I participate with classmates to simplify difficult-to-understand scientific concepts.
33. I seek help from others when it is difficult for me to complete my homework.
34. If there is something that I cannot understand, I ask my teacher to explain it to me.
35. I ask my classmates about concepts that I did not understand well in science.
36. I feel embarrassed when I seek help from my classmates to do science activities.

Turkish Folk Music Lessons with Phenomenon-Based Learning: Preliminary Lessons and Results

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Abstract

This paper presents the results of a pre-experimental design. The study was carried out with a single-group posttest model. In this study, the Turkish Folk Music unit was chosen for investigation as part of Phenomenon Based Learning with 10th grade high school students. In order to carry out the Phenomenon Based Learning process in an effective way, the teacher is meant to be well-prepared in different aspects. Therefore, during the research, the music teacher tried different introductory and follow-up activities. Following this, the opinions of 84 high school students were considered, concerning the activities. Results revealed that the introductory activities have the utmost importance in Phenomenon Based Learning. Although this study was carried out within time constraints, it was evident that these activities had a great impact on the students and the teacher. The students' discoveries and inferences about both Turkish Folk Music and themselves for the future emerged as promising.

Keywords: music education, phenomenon-based learning, Turkish folk music

The teaching and learning approach, which combines and integrates course subjects that have been offered in different ways in Finnish schools since the 1980s, and has become part of Finnish teaching culture, plays a leading role in the 2014 Finnish National Education Curriculum. The approach is called Phenomenon Based Learning (PhBL). With the implementation of this new curriculum in 2016, all schools in Finland began to feature a multidisciplinary program devoted to problem-based teaching and learning at least once a year (Sahlberg, 2018, p. 94–96).

In terms of the topics and main areas covered in PhBL, "the development of multidisciplinary modules in various fields such as language, geography, science and economy and discussion of topics such as climate change, the European Union or the 100th anniversary of Finland's independence" (Sahlberg, 2018, p. 94), and contains an applied structure of pedagogically different models. Ottava College calls PhBL an umbrella approach "rather than a pedagogical model...a way of organizing learning in which different research-based pedagogical models are applied" (quoted by Karlsson, 2017, p. 29–30).

Lonka (2019, p. 173) states that PhBL accentuates a holistic approach to learning. This approach is based on the idea that school knowledge should be associated with real-life problems. Students need to learn to come up with new solutions collaboratively. It also combines information on different topics. The aim is not to replace subject learning, but to put it in a broader perspective. "The aim of PhBL is simply opening the bigger picture to the world and understanding it" (Karlsson, 2017, p. 25).

In PhBL, Valamis (2019) listed on its website, that "no specific subject is taught, nor is there any preset learning objective" but "it is also possible to study a subject matter in a phenomenon-based way" (Lonka, 2019, p. 173). The important points are that students work collaboratively, develop problem-solving skills, foster creativity and research skills, learn how to learn, link school knowledge with real-life problems, examine issues from an interdisciplinary and multicultural perspective, and take in other broad 21st-century skills simultaneously (Fields, 2019a; Lonka, 2019, p. 173; Valamis, 2019). The World Economic Forum (2020) presents 21st century skills as Complex Problem Solving, Critical Thinking, Creativity, People Management, Coordination with Others, Emotional Intelligence, Judgment and Decision Making, Service Orientation, Negotiation, and Cognitive Flexibility.

PhBL has five dimensions. These five dimensions are identified and defined within research as:

Holism: "PhBL emphasizes a holistic approach to learning. It is based on the idea that in order to develop problem-solving skills, school knowledge needs to be linked to real-life problems. Students need to learn how to create new solutions in collaboration. It also combines knowledge from different subjects." (Lonka, 2019, p. 173).

Authenticity "implies the use of methods, tools and materials, which are necessary for real-world situations to solve problems that are relevant to students' lives and significant in the community" (Symeonidis & Schwarz, 2016).

Contextuality "refers to the learning of phenomena as systemic entities, which are meaningful in a natural context and setting. In this sense, a phenomenon cannot be predefined but stays rather vague and ambiguous, as it is brought up by the students who observe their wider context

In PhBL and teaching, holistic real-world phenomena provide the starting point for learning" (Silander, 2015b).

Problem-based inquiry: In PhBL the phenomenon "starts from asking questions or posing problems. At its best, PhBL is problem-based learning, where the learners build answers together to questions or problems posed concerning a phenomenon that interests them" (Silander, 2015a, p. 17).

Open-ended learning processes: "In the learning process, new information is always applied to the phenomenon or solving a problem, which means that the theories and information have immediate utility value that is already evident in the learning situation" (Silander, 2015a, p. 17).

In the last decade, different studies have been conducted in different countries on PhBL. These studies reveal that students who study with PhBL show significant improvement compared to students who study with traditional methods. When the topics covered are examined, it is clear that issues related to 21st- century skills emerge as research topics, such as digital development and literacy (Nolkhom and Saifah 2020), creative thinking in physics (Tongsoong and Jermtaisong, 2020), language (Nguyen, 2018), reading (Valanne et al., 2017), and agroecology (Francis et al., 2013).

The Role of the Teacher in PhBL

In traditional education, the teacher is regarded as the most knowledgeable person in the room, the one who teaches those who are willing to learn, utilizing systematic step-by-step planned lessons. With PhBL, the teacher's role is decentralized. However, this does not diminish the role of the teacher but differentiates it, and probably makes it difficult for teachers accustomed to traditional teacher-centered approaches. Lonka (2019, p. 186-187) describes this situation as such: "Even though the phenomenon-based approach calls for the active and responsible role of the participants, the role of the teacher-facilitator should not be undermined. On the contrary, carrying out a phenomenon-based project calls for interdisciplinary and fine-grained, sensitive coaching by the teacher. In addition to subject matter experts, pedagogical knowledge is at the center. The teacher needs to have very good social and emotional skills in order to support constructive interaction and a deepening interest. The task of the teacher is to create an encouraging and safe atmosphere and to act as a 'scientific midwife' in order to help to create new insights about the phenomenon, the topics, the group process, and the emotional challenges of the project."

To carry out the PhBL process in an effective way, the teacher should create a safe environment in which every student can freely express their opinions in the classroom, ask questions, conduct research, cooperate with their classmates, create and structure their knowledge with the right guidance; the teacher should guide them competently in this regard, and come to the fore when necessary to determine the "*anchor phenomena*" (Gunshenan et al., 2021) at the points left incomplete by the students. The teacher should also prepare and apply lectures and "*scaffolding studies*" (Bjønness & Kolstø, 2015). "Each teacher may tailor the elements of PhBL according to their own pedagogical style" (Lonka, 2019, p. 183). In other words, the teacher should be able to take the initiative, consider the needs of the class, including learning objectives and atmosphere and possess sufficient pedagogical equipment and experience.

Background of the Research

In this experimental study, the Turkish Folk Music (TFM) unit was chosen in accordance with the PhBL approach with 10th-grade high school students. In studies conducted in different cities across Turkey, it was found that the rate of listening to TFM is low among adolescents' music listening preferences (Sakar and Maba, 2015).

Beyond listening preferences, TFM is not seen as an interesting subject in music lessons, and little effort is made to learn it. Donna Fields noted a similar situation in her speech at the Oxford National Conference in Italy in 2019 but rejoiced in the fact that all students passed exams successfully for the first time when PhBL was used on the subject of "Ancient Civilizations," a course that a teacher in Spain had had difficulty teaching for years. Fields's (2019b) speech inspired us to choose the topic of TFM in this thesis, a topic in which students generally show little interest and on which they score poorly on exams.

As Lonka (2020) states, "in terms of establishing relationships between different subjects, PhBL teaching also includes an interdisciplinary teaching approach. Interdisciplinary teaching is based on the view that a certain concept, problem or issue is evaluated with the perspectives of different disciplines and then brought back as a whole." At this point, the connection of TFM with the disciplines of geography, history, ethnography, folk dance, visual arts, and literature was deemed appropriate for interdisciplinary work, and it was thought that there would be acculturation, information-gathering, and sharing not only for TFM but also for different aspects of the Turkish culture by establishing interdisciplinary connections. In the thesis process (beyond learning the dynamics and history of TFM), ways to adapt the elements of this music style and use them as a means of expression will be sought.

When the 10th grade music program was examined, the educational attainments of TFM are determined as follows.

Learning Area: Listening-Singing
Sings heroic folk songs
Listens to TFM songs
Sings modal pieces of Turkish music
Learning Area: Musical Perception and Knowledge
Recognizes the beats of Turkish music styles
Recognizes the modal structure of Turkish music
Learning Area: Music Culture
Explains the general characteristics of 17th and 18th-century Turkish music
Explains the importance of the compilers' contribution to TFM
Recognizes Turkish musical instruments

The Rationale of the Research

The teacher who applies PhBL should guide their students in the stages of asking questions and determining the phenomenon, create a safe environment for the students to express their ideas freely, support the group and help them find direction, and observe the students' ability to think holistically, originally, and critically. Students should be willing to connect with different fields, do research, and share their research results. The teacher should back away from his/her position as the only active, leading person in the classroom, and prepare, support, maintain, and evaluate the environment in which students participate.

Students who have been exposed to a rote, knowledge-based process in the education system for many years may resist a student-based, libertarian education approach like PhBL, which is group-work-oriented and requires that students process and structure information themselves. For this reason, in this research, what can be done differently during the introduction to the PhBL course, what types of strategies might be used to direct students to ask questions and find phenomena, and guidance structures are examined. This study attempts to reveal how students and teachers alike evaluate this process.

Materials and Methods

A pre-experimental design was used in this research. "In pre-experimental designs, the researcher works on a single group and an intervention is made to this group during the experiment" (Creswell, 2017, p. 170). The study was carried out with a single-group posttest model. "The application of the independent variable to a randomly selected single group and the measurement of the effect on the dependent variable constitute the single-group model" (Karasar, 2004, p. 96).

Research group. PhBL activities were held with a total of 102 students from different levels studying at a local high school involved in distance education during the pandemic time (10th grade - 11 students; 11th grade - 81 students; 12th grade - 10 students). Following the lessons, the opinions of 84 people (58 girls, 26 boys) who were willing to answer the research questions were recorded.

Data collection. Data were collected using the interview technique, one of the primary qualitative research method techniques. Interviewing is defined as "a mutual and interactive communication process based on asking and answering questions and conducted for a predetermined and serious purpose" (Stewart & Cash, 1985; quoted by Yıldırım and Şimşek, 2013, p. 147). To prepare the interview form, questions were determined with the input of one educational sciences expert, one music education expert, and one high school guidance expert. In line with the opinions of the experts, 11 questions were posed to the students. In the interview form, the questions pertained to feelings that PhBL activities aroused in students, its differences with other music lessons, whether they want to do this type of work again, whether they want to see this type of work in other lessons, how their knowledge of TFM changed (as well as their interest in this type of music), and what these lessons looked like to them (through the application of metaphors). After a music lesson, students were informed about the study, what the questions were, and the importance of their answers.

Ethical procedures. Written permission was obtained from the school administrators regarding the experiment and interview process prior to the research. In addition, the parents of each student were contacted, the nature of the process was explained, and their written permission was obtained. Afterwards, an interview request was sent to the students who attended the classes, and the students who were willing to be interviewed were included in the research process.

Data analysis. Content analysis was applied to the data collected through the interviews. Content analysis has the objective of identifying concepts and relationships to explain the collected data. For this purpose, the collected data must first be conceptualized, then organized logically according to the emerging concepts, and accordingly the themes that explain the data must be determined." (Yıldırım & Şimşek, 2013, p. 259).

Following research guidelines, the following steps were followed in the data analysis process:

- All data were subjected to content analysis and codes were given to "significant sections among the data" (Yıldırım & Şimşek, 2013, p. 259). The coding was done according to concepts obtained from the data.
- In the metaphor analysis, sentences lacking "cause" and which were not meaningful were excluded from the data.
- Then the categories were determined. Yıldırım and Şimşek (2013, p. 268) stated, "codes were brought together and examined, common aspects were examined, and categories and subcategories explaining these categories in more detail."
- The reliability formula, "Reliability=Agreement/ (Agreement + Disagreement)," suggested by Miles and Huberman (1994) was used for reliability calculation and the agreement coefficient between encoders was calculated. The agreement coefficient between the two researchers was found to be 79.95%. Studies with a concordance coefficient above 70% are considered reliable (Miles & Huberman, 1994). This result reveals that the collected data was reliable.
- Categories and subcategories were tabulated. Sample sentences that were thought to best express the categories were selected, presented, and interpreted.

Experimental procedures. During the study, a total of 240 minutes was spent with each group (4 weeks x 2 course hours; class hours: 30 minutes). In the first two weeks, introductory activities were studied, while in the 3rd and 4th weeks, follow-up activities were studied. The courses were held through Zoom and the EIN (Education Informatics Network) digital education platforms. Since the students were not required to attend distance education classes during pandemic conditions, the study was carried out with students who attended the course.

TFM, which is a common subject in the experimental process, was investigated utilizing the PhBL approach, but with different introductory and follow-up activities with each group. The findings were evaluated as a whole with the logic of all students participating in PhBL activities, but teachers' observations concerning each activity were shared separately.

Activities

In order to understand the dynamics of PhBL and gauge "phenomenon identification-questioning" orders in different ways, the teacher first provided "Covid19" as a phenomenon and the students were given the opportunity to ask questions, they were curious about. In the following lessons, activities related to TFM were carried out. In these activities, after different introductions, the students first asked questions about the subject, the questions were noted, and each student was asked to list three questions they were most curious about. The questions that received the most votes were re-read, and the phenomena that would enable the subject to be handled holistically were determined by the students. Once phenomena were determined, lessons were created to explore them.

Below are the different introductory activities undertaken in different groups:

– Without any preliminary preparation about TFM, students asked questions they were curious about. As such, phenomena were determined.
– Students were asked to create mind maps about TFM, and then ask questions about the subject and identify phenomena.
– The study began with a visual about TFM that gave brief information. In the image[1], there are instruments, artists, and folk dances of various regions on the map of Turkey. The given

image was interpreted with the help of questions asked by the teacher. Questions concerning differences in folk dance costumes, the effects of climate and geography on music, life and culture were asked, and the visual was interpreted. Then, students asked questions they were curious about, and phenomena were determined.
- Students were first asked to create mind maps about TFM, the visual related to the subject was revealed and interpreted, and students were asked to read and interpret an article containing brief information about TFM. In the next stage, students determined the phenomenon related to the subject by asking questions they were curious about.
- The teacher started the lesson by playing the *bağlama* and singing a folk song, then briefly focused on the type of music, the region of its origin, and the story of the folk song. Students were asked to write questions that they were curious about, and phenomena were determined, taking their mind maps into account.

Following these introductions, different mini-events were held in which students worked individually, performed research, and prepared mini-presentations to consider what might be done to turn the subjects into projects. These activities included the following scenarios:

- "Let's assume that a museum about world music will be established. In this museum, there will be a room dedicated to the music of every culture. There will also be a room describing TFM. What should we know about TFM in order to design this room? Which aspects of TFM should we consider? How would you design the room?"
- "Let's assume that our school decided to bring your ideas together with the students who share the same desks as you in the future in the I Have *a Message from the Past to the Future* campaign. You are requested to write your ideas about the place and future of TFM in today's music genres in these letters to be opened and exhibited in 10 years. How can you convey your thoughts by building a bridge between the past and the future of TFM?"
- "As a cultural transmitter, you have a journal in which you write to your grandchildren on various topics. Tell your grandchildren about the past, present, and future of TFM by writing an article explaining what TFM is, how it developed, and its importance and necessity."

Findings

In this section, the categories obtained from the data analysis are presented in tables, following by a narrative.

Students described their feelings as happy, excited, curious, enthusiastic, confident, and relaxed when reflecting on their experiences with PhBL, as shown in Table 1.

Table 1
The feelings that PhBL evokes in the students

Happy	because	the activities are fun.
Excited		the classes are going very well.
Curious		I am learning something new.
Enthusiastic		I am thinking "what are we going to do today?"
Confident		I contribute to the lesson by participating in activities.
Relaxed		I can freely express my own ideas and they are respected.

Table 2 illustrates the categories consisting of students' statements about the quality of PhBL which were determined as follows: Curiosity and Imagination, Accessing and Analyzing Information, Information Literacy, Effective Thinking, Questioning and Problem Solving, Creativity and Innovation, Holism and Contextuality, Interdisciplinary, Student-Oriented.

Table 2
The Quality of PhBL Lessons

Category	Sample Sentence
Curiosity and imagination	"It felt very nice to think and talk about such a thing (creating a museum) even if it was a dream."
Accessing and analyzing information	"After the lessons we did, what I realized were the wrong things I thought I knew. A lot of things I knew were actually wrong. I was very happy that these mistakes were corrected after the lessons." "It required more participation than other events. I needed to ask more questions and think."
Information literacy	"We learned that musical events do not necessarily require instruments, and we can gain a lot of information about music by doing the right research."
Effective thinking, questioning and problem solving	"Thanks to my teacher's comment on my way of thinking, I found the answer to the question that had been lingering in my mind for a long time. My teacher got to know me much better because the thought was at the forefront." "I loved the activity where we asked questions. Because I've never thought this deeply about things before."
Creativity and innovation	"I gain different perspectives, I answer the questions I ask, and I place those questions in my imagination." "I really felt that I had improved myself so much just in a lesson without giving away our days and weeks." "I can think creatively, even for a short time, which I noticed in myself."
Holism, contextuality	"I think we are talking about things in the easy world life." "In fact, we learn gradually as we go gradually, so it stays better in mind." "I like to find the phenomenon words or phenomenon sentences about TFM because it is both interesting and comprehensive in that it summarizes a huge subject."
Interdisciplinary	"I would like to be able to compare and contrast music with other branches of art because in this lesson we looked at music from different angles and branches." "It seems music matches with different areas."

Student-oriented	"These were more student-focused, thought-provoking courses." "Lessons are generally very student-oriented. It's a really important feeling to go with the flow as if you were teaching with Socrates in Socrates' time and that his ideas are really important—of course, our teacher is not trying to change our ideas like our teacher Socrates, but she is trying to show us the way."

Students stated that their views on TFM changed positively and that their positive attitudes on research and learning have developed independently of music, which can be seen in Table 3.

Table 3
Thoughts after PhBL

Related to TFM	"I started listening to TFM, it caught my attention more, and I wondered about the instruments and researched them. I think it's a nice genre of music and it's never ordinary."
Related to holistic point of view	"I think it made us appreciate and love music a little bit differently." "Instead of waiting for someone to answer the questions I wondered about, I started researching myself." "I learned to look from many points of view, not from one direction. I realized the mystery in the visible."

Students' opinions on the inclusion of PhBL in other courses were mostly positive (%88) as shown in Table 4.

Table 4
Opinions on the Inclusion of PhBL in Other Courses

Opinion	Sample Sentences	f
Positive	"There is no other lesson where my ideas are so important and able to change the course of the lesson." "...because I would be happy to know where each lesson or topic comes from and why, and I think we are very hungry for information right now." "...because when you do, you become more aware of the things you do, the paths you take, and the effort you put into understanding something is the key to understanding the logic of that business. And you don't easily forget something you understand the logic of."	74
Negative	"I think it won't happen in other courses because there are scientific courses." "I don't want to see the activities we do in other lessons because that's what makes the music lesson special." "I don't want it because it would be difficult."	110

The categories of the metaphorical views of the students towards PhBL are as follows: Comforting, Entertaining, Instructive, Self-Confidence Developer, Liberating, Creative, Holistic, Intriguing. The metaphors and the causes of the metaphors are presented in Table 5.

Table 5
The Categories of the Metaphors

Category	Metaphor	Cause
Comforting	Sea	"It comforts you."
	Therapy	"Sometimes thinking, sometimes having fun, relaxes the soul."
	Therapy	"You go to the psychologist and pour your heart out; it's like asking questions like that."
	Chocolate dessert	"It always makes a good impression."
Entertaining	Educational game	"We learned by having fun like children playing with toys."
	Sitting in the park and watching the children play and have fun	"There is no reason to watch them, but you are happy for no reason."
	A meaningless, happy feeling	"If you speed up the car a little while going downhill and you get a feeling that you can't understand but it makes you extremely happy, that's it."
	Football game	"All emotions in one place."
	Activities in kindergarten	"Personal and entertaining."**
	Fruit	"If you care about it and do it to truly learn, you will be as happy as if you ate fresh fruit, but if you do it casually you will be sad as if you ate rotten fruit."
	Chess**	"Provoking and entertaining."**
	Watching TV	"I enjoy watching a movie as well as doing the activities we do in class."
	Coming home after a tiring day and making coffee and sipping your coffee with classical music.	"I can say that like I love coffee, I love and enjoy the activities we do together."
Instructive	Ferris wheel	"To reach the information we have stored is the best way when the time comes."
	Change	"Cause young people to learn TFM."
	Utopia	"It is not possible, but after all, it is based on thinking."
	Interview	"Mutual dialogues resemble conversations."
	Project assignment	"Careful work."
	Seminar	

	Basketball training	"We learned what we did not know by asking questions and gained new and different information."
	Talking to my friend	"I gain a new experience with the sweat I shed in basketball, and I think it's worth it, and I'm having a lot of fun at the same time."
	Scientific study	"Because when I talk to my friends, I usually learn something."
	Buying something new	"There are those types of questions."
		"We do something new and learn."
	Archaeological excavation	"You know that there are many valuable things under the ground, but you need to be careful, touch the right place, and work hard."
Self-confidence builder	Studying with Socrates	"It's a really important feeling to go with the flow and have your ideas really matter—of course, she's not trying to change our minds like our teacher Socrates did, she's trying to point the way."
	Meeting	"Because everyone's opinion is valued and their right to speak is taken seriously."
	Car	"The car would not have been able to move forward without our participation."
Liberating	Butterfly	"I liken it to freedom."
	My books	"One of the places where I can find my own world."
	Seaside	"I feel free by the sea."
	Chat environment	"A setting where we say what we know and think about a topic."
	Social activity	"We can be more active."
	Reading book	"While reading a book, we dive into the book, and when we listen to music, we get caught up in the feeling of the music."

Creative	Letter	"The activities or articles we did would be our own ideas and thoughts, and the most comfortable platform for us to do or write them comfortably would be letters."
	Snow	"Actually, everything we do from the outside is the same, TFM, but all those questions, all the thoughts, are very different from each other and unique."
	Brainstorming	"Many people come up with their own opinions and we reach good conclusions about a subject."
	Being in charge of a new exhibition as a group	"I likened us to a group that generates ideas for exhibition design."
	Finnish education system	"It does not make the student memorize, it teaches, it is made according to the student's request and makes the student happy."
	Hypnosis	"But not in a bad way. We are all focusing on the same thing, and we all have different ideas in our minds."
Holistic	Layers of the atmosphere	"Atmosphere has layers; events in music can also be these layers."
	Endless jukebox	"When you open that box, a *matryoshka* comes out in different shapes; it is very impressive."
	Pomegranate	"It's whole and not interesting on the outside, but inside it has a lot of different things."
Intriguing	Scrolling through social media	"My friends' ideas are new tabs, and other things may interest me at any time."
	Chatting with myself	"The times I ask questions and wonder are usually with myself."
	Ripped sock	"When you grab the end of the yarn, turn to the area of interest, the rest is coming, just keep pulling."
	Crossword	"Because it is fun, informative and intriguing."**

** Fits in many different categories.

Teacher Observations

Teachers noted that the importance of the introductory activities in PhBL had been understood, and it was seen that students' questions will enable them to deal with the subject from a holistic perspective that will prepare the ground for a good start. They also reported that the fact that they were curious about their own questions on the subject and would work on the phenomenon they determined based on those questions excited students and motivated them to seek answers to their questions. The *why, how* and *what-if* questions and scenarios that are not based on definition eliminate memorization and utilize knowledge and creativity together, giving a spark to students.

Furthermore, when only the questioning activity was performed without preliminary activities, the questions asked were very similar and the subject could not be dealt with holistically. As a result of this, although the phenomena determined by students were related to the subject, they were insufficient on their own, and students could not make a choice among the determined phenomena. As such, they interpreted this as an inadequate introduction to the subject. Students who were not informed about the study stated that they were hesitant to ask wrong questions about the subject and that if the introduction part started with a video, visual, or horizon-opening, better questions would be formed, and the study would be more efficient.

It has been observed that students were influenced by the visuals in the questions that began with them, and they were inspired to form questions. Additionally, it has been observed that students can handle the subject holistically in the mind-mapping activities and, as a result, they asked a variety of questions. The mind-map enabled students to establish different ways of thinking about the subject and to develop different perspectives that allowed them to ask questions pertaining to different disciplines on the subject. In the activity where the teacher played the *bağlama* and sang a folk song, students paid attention, and the teacher's singing with an instrument instead of a recording, aroused their interest. The class responded to the teacher's questions about the folk song, and the lesson, which started in a conversational mood, continued with different activities that preserved the same participatory atmosphere.

While designing the TFM room in the museum event, it was observed that the process of creating questions was done naturally and without difficulty, with the question "What should we know to design this room?" It was observed that students' questions addressed multi-disciplinary perspectives. When the students were asked to address their grandchildren, they used sincere and warm language and stated that they gave advice that encouraged them to listen to TFM and that they wanted them to know the value of our music. The same warmth is not felt in the letters to their peers.

One of the important observations of the study was as follows: When PhBL activities were offered to the same class at different times, students who had difficulty in asking questions the first time and were insecure and hesitant, while determining the phenomena, participated more actively and did not have difficulty (or had less difficulty) in the next activity owing to their prior experience.

Another noteworthy data in practice is that students describe TFM as "old," something which older people listen to. During the study, they concluded that TFM and folk songs are part of life. Listening to the folk songs allowed them to reflect on the lives of people, gain knowledge about the subject, and, most importantly, deal with the subject holistically by establishing connections with other disciplines.

Results and Discussion

In the implementation of PhBL, the teacher's mastery of the main principles of PhBL, as well as his/her mastery of the field, of active learning methods and approaches, inclination to interdisciplinary work, pedagogical equipment, and social skills (communication skills with both students and other teachers) are important. It is immensely important that a teacher who has not been trained in PhBL gains knowledge and, more importantly, experience. As a matter of fact, Fields (2019b) warns teachers about this issue: "it won't work for the first time. It won't work really well the second time. The third time you are more confident, your students are a little more confident. And it begins flowing." As Fields stated, it is extremely essential for the

teacher and students to gain competence in this subject for the efficient functioning of the PhBL process. In the same way, active participation (asking questions, identifying phenomena, and preparing a 'product') helps students as they navigate the new approach. These activities also strengthen communications between the teacher and students.

Each of the introductory activities in this study provided the teacher with direction in asking questions and managing the phenomena-finding processes. In addition, it has been revealed that visual and audio media benefit student learning and participation. Bjønness and Kolstø (2015) point out the importance of scaffolding activities. For the present study, only the mind map activity was used. It has been witnessed that it is effective and that students can ask meaningful questions and identify phenomena thanks to the mental connections they have established through the activity. Thus, starting from the view that PhBL is an umbrella covering many active learning methods and approaches, enriching lessons with different activities should be an emphasis.

This study clarifies the position of students in the traditional educational approach. In this context, they are used to the process of listening, taking notes, and accepting what is given without questioning. In such a system, student creativity is dulled. Learning in a rote-based system means not being encouraged to add to the knowledge base, and most importantly, not being curious about the existence of different information. These may hinder student development. When students' opinions concerning PhBL are examined, their positive feelings become apparent. Students expressed their feelings as excited, curious, enthusiastic, relaxed, and self-confident. Lonka (2019, p. 18) notes changes brought out by the PhBL approach: "According to the Finnish core curriculum, pupils are guided towards recognizing and naming different emotions from early on. Furthermore, they need to gain awareness of their own values, strengths, and weaknesses. In order to cope with others, it is necessary to be aware of one's values, thoughts, hopes, and feelings in different interactions and situations. Such awareness helps to separate one's own thoughts, goals, and feelings from those of others."

Students' opinions that met the dimensions of the new approach in terms of 21st-century skills were considered important. Particular emphasis was placed on the processes by which students acquire knowledge, how they process it, express themselves effectively, ask questions, produce original ideas, and center themselves within the process. While evaluating this relatively limited process, a student noted that "*we learn more information and discover more than other activities.*" Another praised its time efficiency: "*I really felt that I improved myself in a lesson without giving away our days and weeks.*" The majority of the students stated that they enjoyed asking questions and that they realized how effective it was to ask questions ("*I liked the activity where we asked questions. Because I had never thought about this topic so deeply before."*). Asking qualified, in-depth questions that lead to potential research helps students become better critical thinkers and also fosters holistic thinking and cognitive skill. One student noted, "*I had a little trouble finding a keyword because it was a bit difficult to find that keyword from a broad perspective.*" The students themselves coined the word "keyword" to better understand the notion of "phenomena." As a matter of fact, when asked, "Do you want this type of work to continue or to be in other courses?" only one student responded negatively: "*I don't want to because it would be difficult."*

Seventy-four of the 84 students (88%) who answered the research questions expressed a positive opinion on the PhBL approach, displaying an eagerness that they should continue, both in music lessons and other lessons. Only 6 of them gave a negative answer believing that the music lesson is special: *"I do not want to see the activities we do in other lessons because*

I think that's what makes the music lesson special, it is different." Therefore, these views are heard as positive rather than negative. Two of the students thought that certain lessons are not suitable for PhBL: *"I don't think it is suitable in other courses because there are scientific courses, I do not know how it works there."* This judgment of the student actually stems from inexperience. Previous research and studies reveal that scientific courses indeed are suitable for PhBL.

The categories of the metaphorical views of the students towards PhBL are as follows: Comforting, Entertaining, Instructive, Self-Confidence Developer, Liberating, Creative, Holistic, Intriguing. In these categories, the dimensions of PhBL, 21st-century skills, and the relaxing and liberating qualities of these activities were emphasized. Students expressed that they changed their opinions about TFM: "*I know that TFM is not as simple as I thought anymore… If someone asks me what kind of society the Turks are living in, I recommend that they listen to TFM…"* It reveals that the PhBL activities delivered results in terms of music specifically.

Although focused on a single group of students, this study reveals important findings regarding the phenomenon-based approach used with teaching secondary school students. Conducted during the global pandemic, it also clarified the role of more traditional education, and revealed the enthusiasm of students for learning which gave them greater control. The study also offered the perceptions and experiences of teachers and considers their competence in planning, implementing, and evaluating PhBL activities and projects. The students' discoveries and inferences concerning both TFM and themselves for the future were evaluated as promising.

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Effects of Gamified Learning on Students of Different Player Traits in Malaysia

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Abstract

Diversified learning is the path to supplement students' needs in the contemporary generation. These students' lives have revolved around technology since birth; as such, the role of technology cannot be ignored. Furthermore, this was prevalent during the lockdown imposed by the global pandemic which compelled the incorporation of educational technology into student's lives. As gamification harnesses the power of game elements, identifying how gamified learning affects a student's game player traits will be vital in identifying whether specific learning methods can invoke, change and cultivate better learning outcomes. This quasi-experimental study involving two groups of students learning computer science in Malaysia was carried out over eight weeks. Findings revealed that most prevalent player traits changes were evident in the primary construct of social player traits, followed by subconstructs of customization, relationship, socializing, and mechanics. These changes are attributed to the need to reach out, communicate, and collaborate with their peers and look into how the system works for them individually, within the context of the learning and explorative needs of students. As such, gamified learning has not only managed to offer a new paradigm into the learning ecosystem but has also shown that positive changes can be cultivated based on these conditions.

Keyword: educational technology, gamification, diversified learning, learning ecosystem

As the world soldiers on past the restrictions imposed by the COVID-19 pandemic; many fields have turned to harness technology to ensure their survival and continuity in their respective fields (Mohd Nasir et al., 2021; Pongsakornrungsilp et al., 2021; S. Rashid & Ratten, 2020; Wagner, 2021). In the field of education, although an adaptation of technology has been gradually taking place in the past few years (Tomlinson, 2018), the sudden need for emergency remote teaching (Hodges et al., 2020; Schlesselman, 2020) to supplement the lessons taking place during lockdown has been dependent on technological innovations that were placed on the back burner before this scenario (Eradze et al., 2021). From learning management systems (Başal & Kaynak, 2020) to video conferencing tools (Correia et al., 2020; Gillies, 2008; Lawson et al., 2010; Martin, 2005), everything available has been put up front to ensure it is used to supplement and support the learning process. However, simply using a primary LMS platform may not be sufficient for the students from Generation Z (Kasasa, 2020; Widodo et al., 2020), as their needs may be different since their lives have been revolving around technologies since the day they were born. Although sophisticated and advanced technology like Mixed Reality or Augmented Reality might be suitable for simulation-based education (Eradze et al., 2021), it not be suitable to be implemented within the context of mainstream education, as this may require workforce training; as well as the equipping of students with the necessary tools. The most readily available tools for diversification are gamified learning tools such as Kahoot, Quizizz, and others, platforms which are freeware and are easily accessible.

Gamification-based learning is implemented to cater to the educational, technological learning process, which allows for the integration of technology and education laced with game elements to facilitate the learning process (Deterding & Dixon, 2011). By diversifying the method of learning, it is also hoped that these methods and the elements can trigger as well as cultivate player motivation that exists within a user (Monterrat et al., 2015; Mageswaran Sanmugam, Abdullah, Mohd Zaid, et al., 2016; Schoenau-Fog & Henrik, 2014). Thus, the purpose of this study will be to identify internal player traits that exist in students using gamification in learning and exploring the relationship between the player traits, game elements, achievement, and engagement levels.

Implementation of gamification on the teaching and learning process has been widely shown to positively impact the student's achievement (Wolf et al., 2018) and engagement levels (Molnar, 2018; M. Rashid & Suganya, 2017). As gamification uses game elements in a non-gaming context, students tend to relate the experiences of acquiring game elements as a part of the gaming experience. Therefore, game player traits or player motivation will play a vital role in regulating a better-suited learning model for students. Thus, eliminating the one size fits all model implemented in technology-based learning.

Literature Review

Infusing technology into the traditional classroom is the next phase or next upgrade in the teaching and learning method. Nevertheless, treating technology as an add-on to the learning process is a mistake as it leads to the students being disconnected (Selwyn, 2006) and bored (Craig et al., 2004), and their expectation of technology may be different from what is being offered (Sleeman et al., 2020). Hence, just absorbing technology in education has not reaped the same effects as games or using social networking services such as Facebook, Google+, Twitter, and Myspace (Boyd & Ellison, 2007) as when it comes to games, it is something intriguing (Cheng et al., 2015) and for some, it is part of their daily routines (Gardner & Eng, 2005; McGonigal, 2011). Therefore, with this arises the need to consider an approach that fulfills the needs of various students and allows them to be immersed in the learning process.

Finding a suitable tool that caters to the need of all users is near impossible, although finding a common mousetrap may be the best solution in hand – as such, using games as a tool to supplement learning may be the next best choice. Although game-based learning has long been proven to have a significant impact on learners achievement, cognitive and social development (Prensky, 2001; Sung & Hwang, 2013), it is to be noted that the creation of a full-fledged game for a certain subject or subtopic, especially digital games are beyond reach for an educator (Muntean, 2011). Despite the use of game generators to invoke students' critical thinking which are readily available now (Meishar-Tal & Kesler, 2021), they are yet to teach targeted topics. This approach is known as gamification – the use of game elements instead of creating the whole game itself (Deterding et al., 2011) – is the next best alternative for educators and the organization.

In the context of Malaysian education, gamification has been used to investigate the feasibility of usage (Ong et al., 2013), offline usage in teaching (Hong & Masood, 2014), rendering learning explicit while retaining fun factors (Tan et al., 2014), student attitude and acceptance towards usage in learning (Fah et al., 2016), how game elements affected their learning process (Mageswaran Sanmugam, Abdullah, Mohamed, et al., 2016), using analogue gamification to enhance learners attitude (Mee Mee et al., 2021). However, there was a need to look extensively into implementing gamification, where the identifying specialized need of the users will help understand and identify personalized learning to cater to students within the Malaysian education system.

When it comes to playing games, many types of player needs or motivation represent their player traits when engaged in a game (Deterding et al., 2011). Although in gamification, Iosup & Epema, (2014) looked into gamification using Bartle's player motivation scale (Bartle, 1996) and reported a high success rate, what seemed to bring dispute is the change in describing the player traits. A revised version of Bartle's player motivation scale by Yee (2006) considers the player motivation scale for online platform gamers compared to Bartle's player motivation scale created based on multi-user dungeon (MUD) gamers. The usage of player traits as an early indication system to identify the individual needs of students will help future researchers in either game-based learning, serious games, or gamification. Yee (2006) carried out research with 3000 multiplayer online role-playing games (MMORPG); based on 40 questionnaires (quantitative study), streamlined the previous research findings and came up with three main player traits; Achievement, socializer, and immersion. Users under the Achievement spectrum tend to get satisfaction gaining or achieving something within the gaming scenario. Users under the Socializer spectrum, on the other hand, find satisfaction in connecting with others. Moreover, finally, users under the Immersion spectrum strive to submerge themselves and their gaming persona within the game's lore.

The achievement player traits can be further expanded into 3 sub-components:

1. Advancement: – players/students who want to progress or gain something in their tasks or learning process
2. Mechanics: – players/students who prefer to explore the elements of the game or system to improve their learning task performances
3. Competition: players/students who use the challenge as the goal to achieve in their learning tasks

The Socializer player traits have 3 sub-components:

1. Socializing: – players/students who like to communicate and help other players/students
2. Relationship: – players/students who would like to create a bond with other players/students
3. Teamwork: – players/students who like to collaborate to achieve the game goals

The Immersion player traits has 3 sub-components:

1. Discovery:– players/students who like to find something unique or new that others do not find in a game or learning tasks given to them
2. Role-playing: – players who like to create an imaginary persona in a game or learning tasks
3. Customization: – players who like to change and modify the gaming persona that they have in a game or learning tasks

With the Gen-Z students being born into a world filled with technology (Fister Gale, 2015b), technology in entertainment, especially games, is not a significant surprise. Thus, instead of looking at the drawbacks of games and weeding them out, it would be more meaningful if interest in these games is adequately cultivated, to better suit educational outcomes. Many researchers have stated that harnessing the power of games can lead to not only meaningful learning (Muntean, 2011) but also engaging them to the lesson (Farhangi, 2012; Lister, 2015; Meluso et al., 2012; Morrison & DiSalvo, 2014; M. Sanmugam et al., 2017) as well as encouraging autonomous learning among the students (Jang, 2008). Nevertheless, before this level can be achieved, it will be essential to identify the explicit interest of these users to allow the creation of a personalized path of learning as it has to be noted that technological pedagogy in learning is not a one size suits all affair. Therefore, this current study used Yee's player motivation scale as it is a revised version of Bartle's player motivation scale, and it was based on online platform game player motivations. Besides that, Yee's player motivation will be suitable as it helps map out players' traits in participating in the gamified learning process.

Methodology

This study will implement a quasi-experimental study that applies quantitative methods (Cohen et al., 2007; Creswell, 2012). Convenience sampling was utilised (Creswell, 2012), and 53 participants completed the pre and post-intervention, with 25 participants from the treatment group and 28 participants from the control group. The research process began with the administration of the questionnaires involving both control and experimental group students - pre-intervention to identify the levels of player types before any intervention. Then both the experimental and control group students proceeded with their learning process; with the experimental group learning using a gamified e-learning method using Kahoot (exercises will be carried out in this platform), while, the control group learned with non-gamified learning using Google Classroom (The google classroom will be used to only share exercises of the lessons). Upon completion of the second topic, a questionnaire was administered again to see whether the learning process influenced the player types.

The selection criterion for the participants were students from boarding schools who were themselves selected and enrolled into these learning ecosystems based on their excellence in academics (Khalidah et al., 2014; Noriah Mohd Ishak, Ramlee Mustapha, 2006). As such, a

boarding school from the Southern state of Malaysia was chosen for the control and treatment group. The selection was also based on the availability of a computer laboratory. This is to eliminate factors of technology influence and experience among students. Besides that, to reduce learning style bias and impact on the learning process, both control and experimental batch were taught by teachers with the same level of teaching experience, between 5 to 10 years, which is sufficient to teach the subject properly (King Rice, 2010). For confidentiality purposes, the schools' identities are not revealed in this research. The data collection process was carried out over nine weeks.

The instrument /questionnaire which was administered in this research included the Game Player Types Inventory by Yee (2006), based on the technical specifications, the factor loadings of the survey items used are as follows: Advancement (Cronbach's α=.79), Mechanics (Cronbach's α = .68), Competition (Cronbach's α = .75), Socializing (Cronbach's α = .74), Relationship (Cronbach's α = .80), Teamwork (Cronbach's α = .71), Discovery (Cronbach's α = .73), Role-play(Cronbach's α = .87), Customization (Cronbach's α = .74), and Escapism (Cronbach's α = .65). Based on the principal components analysis the 10 factors were extracted with eigenvalues greater than 1. Together, these factors accounted for 60% of the overall variance.

The administration of the instruments was done in dual language (English and Bahasa Melayu) as the Malay language is the mother tongue for most of the students, and this will create easy access and responses by the participants. The instruments were rated using a Likert scale ranging from 1 (Strongly Disagree) to 5 (Agree) and was administered using SurveyMonkey.

As this study used a quasi-experimental design, the Pre- and Post-test design was applied to monitor the change in the measures throughout the study. The use of a control group in this research enhanced the ability to distinguish the effects of the intervention. Secondly, as there was multiple observation, this method did not require exploring a large number of samples. The design notation of the study is shown in Figure 1.

Figure 1
Design Notation of the Study

Time →

Group 1	Obs	Tx	Obs
Group 2	Obs	—	Obs

Legend

Obs	Measurement
Tx	Treatment

The research utilized the mean analysis, paired sample tests, and independent-sample t-tests, supplemented by Cohen D's effect size. For the latter, Table 1 reveals the individual effect sizes.

Table 1
Cohen D's Effect Size

Relative Effect Size	Effect Size
Small	0.2
Medium	0.5
Large	0.8

Findings

For the mean analysis of the three main player traits, Achievement, Social, and Immersion, among the control group pre-and post-intervention, achievement player traits for post-intervention were higher (mean=3.712) than the Pre-intervention phase (mean=3.610). Meanwhile, the Social player traits for post-intervention were higher (mean=4.223) than the Pre-intervention phase (mean=3.679). Finally, the Immersion player traits for post-intervention were higher (mean=3.770) than the Pre-intervention phase (mean=3.758).

For the mean analysis of the ten-player traits sub-constructs, Advancement, Mechanics, Competition, Socializer, Relationship, Teamwork, Discovery, Role-playing, Customization, and Escapism; among participants from the control group pre-and post-intervention; it can be seen that Advancement sub-construct for the post-intervention score was higher (mean=3.935) than the Pre-intervention phase (mean=3.839). The Mechanics sub-construct for the post-intervention score was higher (mean=3.955) than the Pre-intervention phase (mean=3.768). The Competition sub-construct for the post-intervention score was higher (mean=3.134) than the Pre-intervention phase (mean=3.107). The Socializer sub-construct for the post-intervention score was higher (mean=4.223) than the Pre-intervention phase (mean=3.946). The Relationship sub-construct for the post-intervention score was higher (mean=3.560) than the Pre-intervention phase (mean=3.321). The Teamwork sub-construct for the post-intervention score was higher (mean=3.821) than the Pre-intervention phase (mean=3.679). The two mean values reveal that participants' Discovery sub-construct for the post-intervention score was higher (mean=3.839) than the Pre-intervention phase (mean=3.679). The Role-playing sub-construct for post-intervention score was higher (mean= 3.813) than the Pre-intervention phase (mean=3.750). The Customization sub-construct for the post-intervention score was lower (mean=3.762) than the Pre-intervention phase (mean=4.000). The two means of Escapism sub-construct for the post-intervention score was similar to the Pre-intervention phase (mean=3.631)

Meanwhile, the results of the repeated-measures T-test, in n Table 2, for primary constructs of the player traits and Table 3, for sub-constructs of the player traits, note that none of the constructs were found to be statistically significant at the 0.05 level.

Table 2
Paired Sample Test Statistics for the Control Group Pre- and Post-Intervention for Main Constructs

Paired Samples Test					
Main Construct (Control)		Paired Mean Differences	t	df	Sig. (2-tailed)
1	Achievement(Pre) –Achievement(Post)	-0.102	-0.762	27	0.452
2	Social (Pre) -Social (Post)	-0.218	-1.990	27	0.057
3	Immersion (Pre) - Immersion(Post)	-0.013	-0.123	27	0.903

Table 3
Paired Sample Test Statistics for the Control Group Pre- and Post-Intervention for the Sub-Constructs

Paired Samples Test					
Sub-Construct (Control)		Paired Mean Differences	t	df	Sig. (2-tailed)
1	Advancement (Pre) -Advancement (Post)	-0.095	-0.575	27	0.570
2	Mechanics (Pre) - Mechanics(Post)	-0.188	-1.549	27	0.133
3	Competition (Pre) - Competition (Post)	-0.027	-0.113	27	0.911
4	Socializer (Pre) - Socializer (Post)	-0.277	-1.792	27	0.084
5	Relationship (Pre) - Relationship (Post)	-0.238	-1.842	27	0.077
6	Teamwork (Pre) - Teamwork(Post)	-0.143	-1.008	27	0.322
7	Discovery (Pre) - Discovery (Post)	-0.161	-1.288	27	0.209
8	Role-playing (Pre) - Role-playing (Post)	-0.063	-0.482	27	0.634
9	Customization (Pre) - Customization (Post)	0.238	1.376	27	0.180
10	Escapism (Pre) - Escapism (Post)	0.000	0.000	27	1.000

The next phase of the analysis looks into the treatment group. For the mean analysis of the three main player traits, Achievement, Social, and Immersion, the achievement level for post-intervention was lower (mean=3.600) than the Pre-intervention phase (mean=3.671). Meanwhile, social player traits for post-intervention were lower (mean=3.593) than the Pre-intervention phase (mean=3.687). Finally, the Immersion player traits for post-intervention were lower (mean=3.629) than the Pre-intervention phase (mean=3.683).

For the mean analysis of the ten-player traits sub-constructs, Advancement, Mechanics, Competition, Socializer, Relationship, Teamwork, Discovery, Role-playing, Customization, and Escapism; some differences were evident between participants from the control group pre and post-intervention. From the two means, participants' Advancement sub-construct for the post-intervention score was lower (mean=3.787) than the Pre-intervention phase (mean=3.860). The Mechanics sub-construct for the post-intervention score was lower (mean=3.600) than the Pre-intervention phase (mean= 3.680). The Competition sub-construct

for the post-intervention score was lower (mean=3.320) than the Pre-intervention phase (mean=3.380).

From the two means for the Socializer sub-construct, the post-intervention score was lower (mean=3.820) than the pre-intervention phase (mean=3.880). The Relationship sub-construct for the post-intervention score was lower (mean=3.053) than the Pre-intervention phase (mean=3.573). The two means of the Teamwork sub-construct for the post-intervention score were higher (mean=3.770) than the pre-intervention phase (mean=3.580).

The Discovery sub-construct for the post-intervention score was lower (mean=3.510) than the Pre-intervention phase (mean=3.850). The Role-playing sub-construct for the post-intervention score was lower (mean=3.710) than the Pre-intervention phase (mean=3.740). The Customization sub-construct for post-intervention score was higher (mean=3.560) than Pre-intervention phase (mean= 3.480). The Escapism sub-construct for the post-intervention score was higher (mean=3.747) than the Pre-intervention phase (mean=3.587).

Meanwhile, when it came to the results of the repeated-measures t-test, as seen in Table 4, it was found that none of the primary constructs was significant at the 0.05 level or the 0.1 level. Meanwhile, according to Table 5, the relationship sub-construct was significant, $t(25) = 2.564$, $p<0.05$.

Table 4

Paired Sample Test Statistics for the Treatment Group Pre- and Post-Intervention for the Main Constructs

Paired Samples Test					
Main Construct		Paired Mean Differences	t	df	Sig. (2-tailed)
1	Achievement (Pre) - Achievement (Post)	0.071	0.666	24	0.512
2	Social (Pre) - Social (Post)	0.095	0.851	24	0.403
3	Immersion (Pre) - Immersion (Post)	0.054	0.496	24	0.625

Table 5
Paired Sample Test Statistics for the Treatment Group Pre-and Post-Intervention for the Sub-Constructs

Paired Samples Test					
Sub-Construct		Paired Mean Differences	t	df	Sig. (2-tailed)
1	Advancement (Pre) -Advancement (Post)	0.073	0.556	24	0.584
2	Mechanics (Pre) -Mechanics (Post)	0.080	0.684	24	0.501
3	Competition (Pre) -Competition (Post)	0.060	0.309	24	0.760
4	Socializer (Pre) - Socializer (Post)	0.060	0.458	24	0.651
5	Relationship (Pre) -Relationship (Post)	0.520	2.564	24	0.017
6	Teamwork (Pre) -Teamwork (Post)	-0.190	-1.527	24	0.140
7	Discovery (Pre) -Discovery (Post)	0.340	2.006	24	0.056
8	Role-playing (Pre) -Role-playing (Post)	0.030	0.277	24	0.784
9	Customization (Pre) -Customization (Post)	-0.080	-0.503	24	0.620
10	Escapism (Pre) -Escapism (Post)	-0.160	-0.681	24	0.503

Based on Tables 6 and 7, for the construct of Achievement, participants from the Pre-control group (mean=3.610) showed lower traits tendencies compared to the Pre-Treatment group (mean=3.671). For the construct of Social, participants from the Pre-control group (mean=3.679) showed a lower tendency than the Pre-Treatment group (mean=3.687). Participants from the Pre-control group (mean=3.758) showed higher Immersion Player traits tendencies than the Pre-Treatment group (mean=3.683). This difference was not significant for all three traits.

Table 6
Mean Analysis from the Treatment Group Pre-Intervention (Control/Treatment) for the Main Constructs

Mean Analysis				
Main Construct	Group	N	Mean	Std. Deviation
Achievement	Pre-Control	28	3.610	0.490
	Pre-Treatment	25	3.671	0.476
Social	Pre-Control	28	3.679	0.388
	Pre-Treatment	25	3.687	0.463
Immersion	Pre-Control	28	3.758	0.442
	Pre-Treatment	25	3.683	0.522

Table 7
Independent Sample test for the pre-intervention (Control/Treatment) for Main Constructs

Independent Samples Test						
Main Constructs		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Achievement	EVA	0.007	0.933	-0.464	51.000	0.644
	EVNA			-0.465	50.622	0.644
Social	EVA	1.091	0.301	-0.074	51.000	0.941
	EVNA			-0.074	47.114	0.942
Immersion	EVA	1.738	0.193	0.565	51.000	0.575
	EVNA			0.559	47.289	0.579

Key: EVA: Equal variances assumed; EVNA: Equal variances not assumed

Based on Table 8 and Table 9 below, on average, participants from the Pre-control group (mean=3.839) showed lower Advancement Player traits tendencies than the Pre-Treatment group (mean=3.860). Meanwhile, when it came to Mechanics Player traits, participants from the Pre-control group (mean=3.768) showed a higher tendency than the Pre-Treatment group (mean=3.680). For Competition Player traits, participants from the Pre-control group (mean=3.107) showed a lower tendency than the Pre-Treatment group (mean=3.380). This difference was not significant for all the sub construct traits.

For the Socializer player traits, participants from the Pre-control group (mean=3.946) showed higher traits tendencies than the Pre-Treatment group (mean=3.880). For the Relationship player traits, participants from the Pre-control group (mean=3.321) showed lower traits tendencies than the Pre-Treatment group (mean=3.573). Meanwhile, participants from the Pre-control group (mean=3.679) showed higher Teamwork Player traits tendencies compared to the Pre-Treatment group (mean=3.580). This difference was not significant for all the sub-construct traits. Participants from the Pre-control group (mean=3.679) showed lower Discovery Player traits tendencies compared to Pre-Treatment group (mean=3.850). Participants from the Pre-control group (mean=3.750) showed a higher Roleplaying Player traits tendencies compared to Pre-Treatment group (mean=3.740). Participants from the Pre-control group (mean=4.000) showed a higher Customization Player traits tendencies compared to Pre-Treatment group (mean=3.480). This difference was significant $t(51)=2.820$, $p<.05$; and representing a medium-sized effect size of $r=0.78$. Participants from the Pre-control group (mean=3.631) showed higher Escapism Player trait tendencies compared to the Pre-Treatment group (mean=3.587).

Table 8
Mean Analysis from the Treatment Group Pre-Intervention (Control/Treatment) for the Sub-Constructs

Mean Analysis				
Sub-Construct	Group	N	Mean	Std. Deviation
Advancement	Pre-Control	28	3.839	0.479
	Pre-Treatment	25	3.860	0.560
Mechanics	Pre-Control	28	3.768	0.531
	Pre-Treatment	25	3.680	0.503

Competition	Pre-Control	28	3.107	0.837
	Pre-Treatment	25	3.380	0.851
Socializer	Pre-Control	28	3.946	0.602
	Pre-Treatment	25	3.880	0.733
Relationship	Pre-Control	28	3.321	0.517
	Pre-Treatment	25	3.573	0.697
Teamwork	Pre-Control	28	3.679	0.518
	Pre-Treatment	25	3.580	0.562
Discovery	Pre-Control	28	3.679	0.466
	Pre-Treatment	25	3.850	0.505
Roleplaying	Pre-Control	28	3.750	0.549
	Pre-Treatment	25	3.740	0.557
Customization	Pre-Control	28	4.000	0.660
	Pre-Treatment	25	3.480	0.681
Escapism	Pre-Control	28	3.631	0.843
	Pre-Treatment	25	3.587	1.164

Table 9

Independent Sample test for the pre-intervention (Control/Treatment) for Sub- Constructs

Independent Samples Test						
Sub- Constructs		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Advancement	EVA	0.218	0.643	-0.145	51.000	0.885
	EVNA			-0.144	47.538	0.886
Mechanics	EVA	0.000	0.983	0.616	51.000	0.540
	EVNA			0.618	50.813	0.539
Competition	EVA	0.171	0.681	-1.175	51.000	0.245
	EVNA			-1.174	50.125	0.246
Socializer	EVA	1.312	0.257	0.362	51.000	0.719
	EVNA			0.358	46.608	0.722
Relationship	EVA	0.794	0.377	-1.504	51.000	0.139
	EVNA			-1.479	43.934	0.146
Teamwork	EVA	0.644	0.426	0.664	51.000	0.509
	EVNA			0.661	49.077	0.511
Discovery	EVA	0.076	0.783	-1.285	51.000	0.204
	EVNA			-1.279	49.109	0.207
Roleplaying	EVA	0.053	0.818	0.066	51.000	0.948
	EVNA			0.066	50.151	0.948
Customization	EVA	0.562	0.457	2.820	51.000	0.007
	EVNA			2.815	49.934	0.007
Escapism	EVA	4.335	0.042	0.160	51.000	0.874
	EVNA			0.157	43.305	0.876

Key: EVA: Equal variances assumed; EVNA: Equal variances not assumed

Based on Table 10 and Table 11, participants from the post-control group (mean=3.712) showed higher Achievement Player trait tendencies than the post-Treatment group

(mean=3.600). Participants from the Post-control group (mean=3.770) showed higher Immersion Player trait tendencies than the post-Treatment group (mean=3.629); both traits were not significant. Meanwhile, participants from the post-control group (mean=3.896) showed higher Social Player traits tendencies than the post-Treatment group (mean=3.593). This difference was significant t(51)=2.813, p<.05; and a small-effect size of r=0.32.

Table 10

Mean Analysis from the Treatment Group Post-Intervention (Control/Treatment) for the Main Constructs

Mean Analysis				
Main Construct	Group	N	Mean	Std. Deviation
Achievement	Post-Control	28	3.712	0.529
	Post-Treatment	25	3.600	0.439
Social	Post-Control	28	3.896	0.391
	Post-Treatment	25	3.593	0.393
Immersion	Post-Control	28	3.770	0.488
	Post-Treatment	25	3.629	0.429

Table 11

Independent Sample Test for the Post-Intervention (Control/Treatment) for Main Constructs

Independent Samples Test						
Main Construct		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Achievement	EVA	0.573	0.453	0.831	51.000	0.410
	EVNA			0.839	50.754	0.405
Social	EVA	0.019	0.891	2.813	51.000	0.007
	EVNA			2.813	50.271	0.007
Immersion	EVA	0.681	0.413	1.118	51.000	0.269
	EVNA			1.126	50.992	0.265

Key: EVA: Equal variances assumed; EVNA: Equal variances not assumed

Based on Table 12 and Table 13, on average, participants from the post-control group (mean=3.935) showed higher Advancement Player traits tendencies than the post-Treatment group (mean=3.787). Participants from the Post-control group (mean=3.134) showed lower Competition Player traits tendencies than the post-Treatment group (mean=3.320); both traits were not significant. Meanwhile, participants from the post-control group (mean=3.955) showed higher Mechanics Player traits tendencies than the post-Treatment group (mean=3.600). This difference was significant t(51)=2.734, p<.05; and a medium-effect size of r=0.76.

Participants from the Post-control group (mean=4.223) showed higher Socializer Player traits tendencies than the post-Treatment group (mean=3.820). This difference was significant t(51)=2.578, p<.05; it represented a medium-sized effect size of r=0.71. Participants from the Post-control group (mean=3.560) showed higher Relationship Player traits tendencies than the post-Treatment group (mean=3.053). This difference was significant t(51)=3.161, p< .05; and revealed a high-effect size of r=0.87. participants from the post-control group (mean=3.821)

showed higher Teamwork Player traits tendencies than the post-Treatment group (mean=3.770). This difference was not significant t(41.973)=0.401, p>.05; and a small-effect size of r=0.11.

Participants from the Post-control group (mean=3.839) showed higher Discovery Player traits tendencies than the post-Treatment group (mean=3.510). Participants from the Post-control group (mean=3.813) showed higher Roleplaying Player traits tendencies than the post-Treatment group (mean=3.710); neither trait was significant. Participants from the Post-control group (mean=3.762) showed higher Customization Player traits tendencies than the post-Treatment group (mean=3.560). This difference was significant t(51)=1.202, p<.05; and a small-effect size of r=0.33. Participants from the Post-control group (mean=3.631) showed lower Escapism Player traits tendencies than the post-Treatment group (mean=3.747). This difference was not significant t(47.266)=-0.497, p>.05; and revealed a small-effect size of r=0.14.

Table 12

Mean Analysis from the Treatment Group Post-Intervention (Control/Treatment) for the Sub-Constructs

Mean Analysis				
Sub-Construct	Group	N	Mean	Std. Deviation
Advancement	Post-Control	28	3.935	0.702
	Post-Treatment	25	3.787	0.453
Mechanics	Post-Control	28	3.955	0.536
	Post-Treatment	25	3.600	0.389
Competition	Post-Control	28	3.134	0.946
	Post-Treatment	25	3.320	0.724
Socializer	Post-Control	28	4.223	0.542
	Post-Treatment	25	3.820	0.597
Relationship	Post-Control	28	3.560	0.529
	Post-Treatment	25	3.053	0.636
Teamwork	Post-Control	28	3.821	0.593
	Post-Treatment	25	3.770	0.314
Discovery	Post-Control	28	3.839	0.537
	Post-Treatment	25	3.510	0.716
Roleplaying	Post-Control	28	3.813	0.592
	Post-Treatment	25	3.710	0.488
Customization	Post-Control	28	3.762	0.614
	Post-Treatment	25	3.560	0.606
Escapism	Post-Control	28	3.631	1.008
	Post-Treatment	25	3.747	0.669

Table 13
Independent Sample Test for the Post-Intervention (Control/Treatment) for Sub-Constructs

Independent Samples Test						
Sub-Construct		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	df	Sig. (2-tailed)
Advancement	EVA	0.844	0.362	0.899	51.000	0.373
	EVNA			0.921	46.635	0.362
Mechanics	EVA	1.791	0.187	2.734	51.000	0.009
	EVNA			2.783	49.033	0.008
Competition	EVA	2.283	0.137	-0.797	51.000	0.429
	EVNA			-0.809	49.875	0.422
Socializer	EVA	0.001	0.972	2.578	51.000	0.013
	EVNA			2.563	48.790	0.014
Relationship	EVA	0.059	0.809	3.161	51.000	0.003
	EVNA			3.128	46.921	0.003
Teamwork	EVA	5.282	0.026	0.388	51.000	0.700
	EVNA			0.401	41.973	0.691
Discovery	EVA	0.568	0.455	1.907	51.000	0.062
	EVNA			1.876	44.219	0.067
Roleplaying	EVA	1.518	0.224	0.683	51.000	0.498
	EVNA			0.691	50.700	0.493
Customization	EVA	0.028	0.869	1.202	51.000	0.235
	EVNA			1.203	50.468	0.235
Escapism	EVA	5.714	0.021	-0.486	51.000	0.629
	EVNA			-0.497	47.266	0.621

Key: EVA: Equal variances assumed; EVNA: Equal variances not assumed

Discussion and Findings

For the Control Group, pre and post-test analysis, all player traits increased except customization based on the mean value. Meanwhile, based on the repeated measures t-test for the control group that carried out their lesson using Google classroom, no traits were significant. Based on the mean increase for all but one construct, it can be seen that the participants who were students aged 13-14 years old from the Gen-z batch seemed to have shown some form of preference and eagerness towards using the Google classroom platform to learn (Fister Gale, 2015b; Sparks&Honey, 2014). Any form of diversified learning triggered their interest. However, when it came to customization construct, a drop in mean value was evident, because the teacher fully controlled this platform (Finlay et al., 2004), and the participants could access the notes or tasks given within the platform. This is vital as students would like to have at least the opportunity to have some control when it comes to the interactive platform being used for learning (Javora et al., 2021).

For the treatment group that learned using a gamified platform (Kahoot), the pre and post-test analysis, based on the mean value, all player traits decreased except teamwork, customization, and escapism. Meanwhile, based on the repeated measures T-test, no main player traits were significant, but the sub-construct of the relationship was significant. The findings revealed that

all means saw a drop between pre-and post-test, yet an increase was evident in the teamwork, customization, and escapism part of the learning process. This can be attributed to the lockdown phase, where access to a fully-fledged game was more prevalent to the students (Alsaad et al., 2021), and when they were introduced to a low-level and gamified/game-based learning platform, they were feeling a little detached from the learning ecosystem (An & Oliver, 2021). The teamwork sub-construct player traits saw an increase as the students may have communicated to face the tasks together as a team or duo to make it easier for them and score better marks (Misra & Mazelfi, 2021; Subhash & Cudney, 2018). The customization trait can also be attributed to the fact that the students can access the Kahoot platform separately and test out the systems for themselves (Javora et al., 2021; Roberts-Mahoney et al., 2016). Finally, escapism can be attributed to the feeling of escaping the norms of online learning imposed on them during the pandemic lockdown (Hussain et al., 2021; Labrecque et al., 2011). Although not the best option, what was available to them allowed them to escape the hold of online learning.

Based on the results of the independent sample t-test, the pre-intervention condition from both groups (Control and Treatment), the Customization sub-construct of the player traits was found to be statistically significant due to the personal experience of these students when it came to real-life situations. For instance, under lockdown, a student may be constricted to a specific routine in the real world, which is fixed. Nevertheless, some students find the most superficial satisfaction in changing or modifying aspects around them (Javora et al., 2021). For example, changes in the theme or style of their digital devices may trigger these thoughts among the students. Based on the independent sample t-test, the post-intervention condition from both groups (Control and Treatment), it is evident that the social main player traits revealed a significance due to two aspects; 1) the social status needs of Gen-z students (Dewi et al., 2021) and 2) the interaction invoked by the game-like experience (Eck, 2006). Socializing status is the need for the students of the current generation to connect and communicate with others (Fister Gale, 2015a; Sparks&Honey, 2014). This further seemed relevant for them under lockdown conditions due to Covid-19. Besides that, the gaming ecosystem triggered the need to communicate with other players that play by their side (Tondello et al., 2019; Wölfl et al., 2021).

Meanwhile, when it came to the sub-constructs, Mechanics revealed a significant difference since the gamified platform offered numbers and statistics (Barata et al., 2011; Mekler et al., 2013; Thom et al., 2012) that can be observed based on the tasks carried out by the students, in comparison to the basic Google classroom. Meanwhile, socialization and relationships were triggered due to casual chats triggered by the need for the students to communicate and reach out to others to help or get help, thus creating a bond/friendship among their peers (Subhash & Cudney, 2018). Finally, the Discovery sub-construct was significant due to the feeling of trying out a gamified learning environment, which was unique and different from the usual lesson that the students were going through (Plass et al., 2015).

Conclusions

From the findings, it is to be noted that although using gamified learning to supplement learning was effective during the pandemic, diversified ways of learning were the best way to engage the student's interest. As such, the use of Google classroom and Kahoot as an add-on tool can help encourage the students to learn, since it motivated the students in testing times. However, one of the distinct traits that were evident in each group was customization. This can be attributed to the changes in the educational ecosystem seen before the lockdown, where the

teachers were merely facilitators and students took charge of their learning needs. Nevertheless, the Covid-19 lockdown reversed the path of learning, with the teaching and learning process being fully teacher-orientated sometimes leaving students as mere spectators. This scenario left the students craving more freedom and control when it came to their learning. The significant trait changes shown in Socializing, through the teamwork construct revealed a need for resilience among students under lockdown, through communicating and collaborating with their peers. The discovery, mechanics, and customization traits can contribute to the need-to-know attitude or digital literacy of the young participants who would like to explore what is put forth in a lesson. The curious findings of escapism, which reveals that the students felt trapped within the learning system imposed by the covid lockdown. However, the current situation falls under the emergency remote teaching phase, and it will be replaced slowly once schools start reopening. Yet, the infusion of education and technology will not recede; instead, it will be continually used as learning progresses in the new millennia. This may lead to face-to-face learning being one day restricted to certain subjects or topics, while others can be carried out from the comfort of the home.

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Sustaining Language Learning through Social Interaction at a Japanese National University

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Abstract

The careful use of online learning can achieve a variety of goals in sustainable education, such as providing access for students, particularly in times of crisis, as well as providing them with opportunities to study interdependently. Also, it gives them the opportunity to develop thinking skills and awareness to become active in working towards sustainable societies, ones where the actions of the current society do not damage the abilities of future generations to address their own needs. In this small-scale study at a Japanese national university, the switch from classroom-based teaching to online study in language education is considered in relation to flipped learning. This involved videoconferencing software and the organization of "study buddy" groups, supported by materials on a learning management system. The effect of the change has been investigated using a mixed-methods approach with survey data from students and data from two classroom observations by external observers. The data has been analyzed and framed in relation to sustainable education goals, produced by Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT), such as cooperation, interdependence, sense of responsibility, and international awareness. The author of this study found that the flipped learning approach was successful in building an online community and social interaction that provided the framework for achieving education for sustainability. In conclusion, the author considers how hybrid courses involving both classrooms and online technology may be the future for English language courses in Japanese universities.

Keywords: English language education, flipped learning, sustainable education, online learning, study-buddy

In a period of globalization and climate change, educators must increasingly adapt to disruptions due to emergencies relating to natural events. In Japan, which is susceptible to typhoons, earthquakes and tsunami, as well as outbreaks of disease, having the capacity to maintain courses and classes effectively during difficult times is becoming increasingly important. This is particularly relevant to language teaching and learning, where social interaction is given high priority, usually requiring students to study while being in physical proximity with each other so that they can communicate. Furthermore, there is an increasing need to focus on sustainable education to develop citizens who can contribute to slowing or reversing severe problems emerging due to unsustainable human activity. In this article, consideration is given to how online learning can contribute to sustainable education in the field of language learning.

With the COVID-19 crisis in 2020, most Japanese national universities effectively transformed classroom-based education into online education. This, in effect, created a physical barrier between teacher and student as well as between the students themselves. For teachers, the challenge was how to utilize software, and develop online skills and ways of teaching that delivered language courses effectively. At the author's university, the available avenues of delivery were the university's learning management system Blackboard Learn R9.1 (Bb9) and videoconferencing software, such as Microsoft Teams and Zoom.

The author of this paper specializes in the teaching of productive skills (speaking and writing) in English for first-year students who are required to take a set of English courses as part of their general education. A flipped learning approach was used that involved self-study using Bb9 combined with an online class. During 2020, two different videoconferencing software packages were used. The first was Microsoft Teams, which was combined with out-of-class "study buddy" groups, where students were placed in small teams and collaborated outside of class time to promote learner autonomy, cooperation, and partnership – goals of sustainable education. The second software package was Zoom, which at that time had an advantage over Teams because of its breakout room function that allowed "study buddy" interaction to take place in online class time.

The aim of this paper is to describe how videoconferencing tools, "study buddy" groups and a learning management system were used in online English language courses for productive skills and to evaluate the new way of delivering classes in relation to sustainable education. The use of the technologies described in the study is not only relevant for infection control due to the COVID-19 pandemic, but it also contributes more broadly to sustainable education goals.

Theoretical Background

Japanese Government Promotion of Sustainable Education

The courses described in this study took place in a Japanese context, and a major source of influence is the Ministry of Education, Culture, Sports, Science and Technology (MEXT). The Ministry has emphasized sustainable education, one that promotes a society in which the actions of the current generation do not damage the abilities of future generations to address their own needs. In a world where there are severe problems such as climate change, resource depletion, and a biodiversity crisis, the goal of sustainable education is to develop problem-solving skills in order to realize and tackle the problems in the environment. As MEXT (2016, p. 4) suggests: "Think globally, act locally."

For MEXT (2016), all learners need to acquire the knowledge and skills required to promote

sustainable development such as "promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and culture's contribution to sustainable development" (2016, p. 5). Another aim is to ensure "inclusive and equitable quality education and promote lifelong learning opportunities for all" (MEXT, 2016, p. 5).

MEXT (2016) has also emphasized the need for teachers and students to work on issues concerned with building a sustainable society, involving themes such as diversity, interdependence, limitation, fairness, cooperation, responsibility. Cooperation, responsibility and interdependence were significant aims of the online course discussed in this article. In addition, students need to acquire competences necessary to solve problems in order to build a sustainable society. These competences include the ability to think critically, plan for the future, think in multidimensional and integrative ways, communicate, cooperate with others, respect relations and connections, and participate proactively.

The Relevance of Sustainable Education to Language Courses

When considering sustainable education, MEXT (2013) stresses that it is important to promote "proactive learning, interactive learning, and in-depth learning". This implies not only the exploratory learning process, such as appropriate implementation of problem-solving learning, enriching opportunities for proactive learner-centered learning with experiences and activities, but a thorough examination about which part of the learning process is most efficient and how to implement it. In other words, the aim should be to organize cooperative learning by integrating group activities and supporting students so that they can discuss and work together on various topics in order to undertake activities or give presentations.

The online teaching delivery methods discussed in this article aim to contribute to these particular goals of sustainable education. For instance, they create more equal opportunities for education since students from a variety of backgrounds can access classes and materials online regardless of their location. Further, online learning management systems provide flexible access to content regardless of time; therefore, they are more cost-effective for universities to distribute course content, avoiding the cost and waste of distribution through paper. Online methods involving both learning management systems and videoconferencing can extend the learning experiences for students who cannot attend traditional face-to-face classes by giving them multiple study opportunities. In addition, the methods applied in online education are generally much lower in carbon intensity, requiring less commuting, since students can take courses from the comfort of their home, which is an additional benefit in terms of sustainability.

Previous research (Exter et al., 2009; McInnerney & Roberts, 2004; Tanabe, 2015) suggests that online teaching has the potential to improve the quality of learning experience by involving a varied community of learners. McGuire & Castle (2010) have stated that another benefit of the online method in terms of sustainable education goals is the nature of asynchronous discourse, where there is a time lag between responses, allowing responders time to think, examples being the posting of audio recordings (speaking) and blog entries (writing) on a learning management system. In these cases, other students can listen, read, and comment. Asynchronous discourse often involves deep learning, which involves self-reflection and self-awareness, more so than synchronous discourse, which is more strongly associated with a traditional classroom setting. Also, students who employ deep learning may identify a greater satisfaction in self-learning (Warburton, 2003). For these reasons, online teaching can be an effective tool in achieving sustainable education.

Teaching English through a Communicative Approach

Sustainable education has a strong link to language learning and teaching, particularly in relation to international communication and learning through discourse and interaction. The communicative approach, otherwise known as communicative language teaching (CLT) highlights the importance of situation and context in understanding language that communicates meaning. As Nunan (2004, p.7) states, it is about "language that can be thought of as a tool for communication". Williams and Burden (1997) have researched Vygotsky's social constructivism, which stresses social interaction for learning, as a psychological underpinning to the approach. In the case of communicative language teaching, both teacher-student interaction and student-student interaction are considered very important. The courses described in this article were strongly influenced by Vygotsksy's psychology, particularly in relation to social interaction.

Communicative language teaching (CLT) focuses on meaningful communication in the target language. Based on Littlewood's (1981) explanation, this approach places emphasis on interaction in the classroom between peers and between teacher and learners while combining functional and structural features of language. CLT makes language learning authentic and helps learners to use language both productively and receptively in order to achieve communicative ability.

Larsen-Freeman (1986) claims that CLT relates to authentic, communicative events; therefore, the right circumstances are in place for communicative exchange. Also, the students get immediate response from their peers or teacher on whether or not their communication was successful. Moreover, small group work provides more opportunities for practicing communication and offers learners the chance to share their ideas and opinions. This way of communicative interaction enhances cooperation and negotiation of meaning among learners (Larsen-Freeman, 1986). Jacobs and Hall (2002, p. 53) mention a number of benefits with CLT such as "increased student talk, more varied talk, a more relaxed atmosphere, greater motivation, more negotiation of meaning, and increased amounts of comprehensible input".

Building a sense of community (SoC) is considered highly important in classes to minimize student isolation (McMillan & Chavis, 1986). Also, communicative interaction, cooperation, negotiation of meaning among learners, and the need for learning through social interaction are relevant for the English Communication classes. With a switch to online learning, it was important to think through how these could be incorporated in the new learning environment. If students were to build their language through interaction, videoconferencing sessions using Teams and Zoom seemed to be the best option for the course.

The Flipped Approach

The term "flipped learning" is used by Bergmann and Sams (2012) to describe a new model of instruction. It is "a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter" (Network, 2014, p. 1). Enokida et al. (2018) state that one advantage of a flipped classroom is flexibility since it allows instructors to spend more time on covering the materials, answer students' questions and have group discussions. In flipped learning, students acquire knowledge prior to class, then use that knowledge in group activities that foster their productive and creative skills during class time (Enokida et al. 2018). The course discussed in this study followed the flipped approach. Students were asked to work on a learning management system, complete assignments, and

watch videos to help them prepare for an online class that involved discussions.

Method

Courses Involved in the Study

The focus of this study is on two courses taught to first-year students, one on developing speaking skills and one on writing skills. For the speaking skills course, self-study materials were placed on a learning management system (Bb9), students were organized into "study buddy" groups that arranged their own communication outside of class, and each week students attended an online Teams class as a whole group. The average class size consisted of 25 students. For the writing skills course, self-study materials were placed on Bb9, and each week students attended an online Zoom class, and "study buddy" communication took place during classes through the use of Zoom's breakout room function. Zoom's breakout room feature allows the teacher to split the participants into small groups. The teacher can then join these groups and monitor students' interaction, as Selwood explains (2021).

Participants

The participants were first-year Japanese university students enrolled in the productive skills courses. They were not at university to study English as a specialism, but were members of faculties such as Education, Engineering, Science and Law; their English communication courses were mandatory for them to graduate. The questionnaires were administered online to 280 students and 223 students responded and took part in the study.

Research Questions

The study seeks to answer the following research questions:

1. What do the students think about videoconferencing software used in online learning?
2. How do students perceive learning with online "study buddies"?
3. How effective was the online teaching delivery in developing students' skills and attitudes related to the goals of sustainable education?

Data Collection and Analysis

In this small-scale case study, data were collected through questionnaires and teacher reflection notes. Questionnaires were administered twice: in the eighth and sixteenth weeks of teaching (mid-course and end-of-course). The survey contained items on a four-point Likert scale to avoid neutral responses and also included open-ended items to complement quantitative data. The questionnaires and students' responses were in English. The qualitative data in the article are quoted directly, including students' grammatical mistakes. Triangulation was used to "increase the internal validity of the study by combining both insider, and outsider aspects of phenomena" (Duff, 2008, p. 143); the two sets of survey results were triangulated with the notes of two teachers who observed a class. In addition, the author has reflected on her experiences of the classes.

Teacher-researcher bias was a potential risk; however, classroom observations helped to reduce this. Moreover, with interpretative research, the aim is to "create an open and honest narrative that will resonate well with readers" (Cresswell, 2003, p. 196). The researcher was teaching the participants; however, it should not be viewed as a danger to validity; Nunan and Bailey (2009) state that the strength of a case study lies in subjectivity, which allows the researcher to elaborate on the investigated phenomenon in depth precisely due to this familiarity. Thus, establishing an emic approach, in other words insider perspective, helps to gain a deeper

understanding of the researched phenomenon (Dörnyei, 2007).

For Likert-scale items, data were tabulated quantitatively, using descriptive statistics. For open-ended questionnaire items, data were analyzed qualitatively, looking for repeated patterns and also finding emergent themes, which were identified with codes emerging from the dataset (Mackey & Gass, 2005). Labels were assigned to data, guided by the research questions.

Findings and Discussion

RQ1: What Do the Students Think about the Videoconferencing Software used in Online Learning?

Students' responses indicated that the Zoom videoconferencing tool was more favored than Teams (See: Figure 1 & Table 1) and students found it more suitable for the courses. This preference was explained by qualitative responses that referred to Zoom's interactive features, its online stability, and the lack of need to create an account to join the session, which was also found by Selwood (2021).

Figure 1

Students' Videoconferencing Tool Preference for the Speaking Course

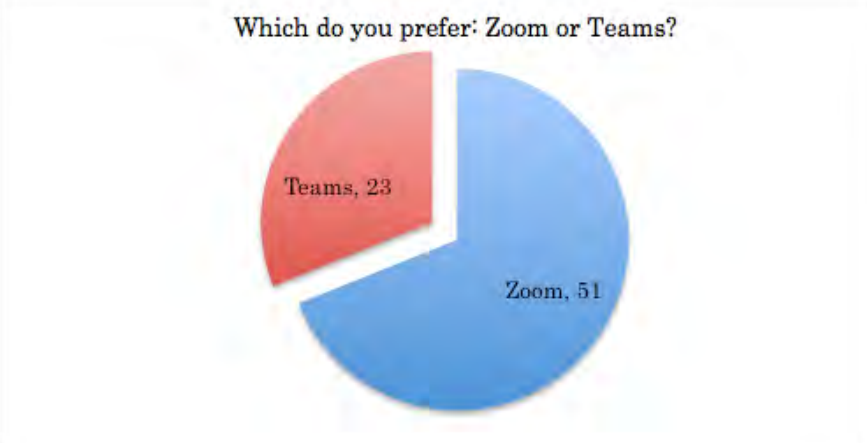

Table 1

Average Feedback Scores for Teams and Zoom Sessions: Speaking and Writing Courses

4 (++) 3(+) 2(-) 1(--) *(4= Very good, 3= Good, 2= Not so good, 1= Not good)*	**Mean**	**SD.**
Teams session rating in Term 1 (Speaking) (N= 74)	3.0	0.7
Zoom session rating in Term 2 (Speaking) (N= 74)	3.5	0.5
Zoom session rating in Term 2 (Writing) (N= 149)	3.5	0.9

The qualitative results also revealed that the majority of students perceived the online videoconferencing positively and benefitted from several advantages of this online delivery method. As one comment from a student illustrates, the breakout room function of Zoom was ideal for discussions and it was useful for social networking and building a sense of community with others: *"I like the discussions in the discussion room because I made friends with other students."*

Another advantage was lexical development with an online platform for learning vocabulary (Quizlet Live), which was shared on Zoom during the online class. Students formed teams and worked together in breakout rooms to participate in a vocabulary-building game. Learning vocabulary online while collaborating with their group members and competing with their peers seemed to be effective for students and they found this type of learning enjoyable, as the following comments illustrate:

> *"Online word learning is easier than learning words using a vocabulary book."*
>
> *"There are a lot of functions that help me, and I was able to learn new words while having fun."*

Students also favored the use of the chat function (communicating through written messages) in videoconferencing to share their answers in parallel with speaking to peers; less confident students could participate actively so that *"everyone has a chance to answer".* In this way, all students were involved in the discussions. In connection with the online speaking course, students had positive comments about the content and topics. They particularly liked to learn about other countries and cultures in English. Some students also enjoyed summarizing and presenting the stories from the materials and giving presentations online. These activities were aimed at developing students' acceptance of cultural diversity, intercultural awareness, and developing a positive attitude towards other cultures, which significantly relates to the goals of sustainable education as the following comment from a learner illustrates: "*I can know about various countries, so I enjoyed it like traveling world.*"

Some students reflected on the convenient nature of online learning because they could take the course from the comfort of their home and this way of learning is more flexible compared a traditional classroom setting: *"I can study anywhere, anytime."* However, one student suggested that face-to-face learning supported by a learning management system would be more suitable for English communication. This is in relation to the flipped approach in which a learning management system with backup materials online can support students' learning, as the student's feedback demonstrates: "*Basically, I think that online learning is good for students. Online system bring us new ways to learn which we could not access ever before, but I think the best way would be face to face classes and the online system supports that.*"

RQ2: How Do Students Perceive Learning with Online "Study Buddies"?

According to the students, the online study buddies were found to be helpful in various ways. For instance, during the writing course, students could receive more ideas from each other through peer collaboration than writing by themselves. Online study buddies were also useful for revision and enhancing student motivation, based on the feedback:

> *"I think it is better to learn with my Online Study Buddies because I can confirm whether my answer is good or not and teach with each other."*

Another student expressed the same idea:

> *"Because we can help each other's writing, I think it is better to learn with my Online Buddies."*

These comments refer to cooperation and support, which are necessary skills outlined in the goals for sustainable education by MEXT (2016). Students need to cooperate and work on

problems together for a sustainable future.

Online study buddies proved to be useful for building a sense of community and valuing connections as well as social networking. According to MEXT (2016), education for sustainability focuses on partnerships to build networks and relationships, and improve communication between people; therefore, online study buddies were ideal, illustrated by the following feedback from a student: "*We can communicate and make friends with each other.*" Other students also emphasized support and the importance of being in an online community: "*…because we can help each other. I think it is better to learn with my Online Buddies.*" Another learner pointed out the benefit in terms of motivation: "*…because we can work hard and encourage each other and cooperating with each other.*"

Creating online study buddies encouraged students to self-regulate their learning. They had to gather weekly and find time to study together. Peers were responsible for their own and their study buddies' learning. This is a case of interdependence, a sustainable education goal: "*It is better to learn with buddies because I can work hard with buddies.*" Education for sustainability encourages individuals and groups to reflect upon personal experiences, worldviews, and various interpretations as well as ways of engaging with the world (MEXT, 2016). Online study buddies contributed to these critical thinking skills through an interactive learning aspect: "*I think it is better to learn with our Online Buddies because we can get more ideas from them.*"

In addition, the majority of students found that online study buddies were not only useful but enjoyable as well. They expressed their preference towards learning in an online community instead of learning on their own, for instance in a self-study class. One of the comments illustrates this point: "*I think it is better to learn with my Online Study Buddies because we can study happily.*"

According to students, there were some negative aspects of online study buddies, related to the size of the group and time management. Feedback from some students revealed that it was easier to work together in pairs and they found it difficult to study together in groups of four with their online study buddies. Also, some students found it challenging to coordinate the time to meet with their peers because they belonged to various departments and had different schedules. It would have been more suitable to ask students to form their own study buddy groups and choose peers on their own. These drawbacks were expressed in the following comments: "*It is difficult to find time with the buddies so it is better without.*" Another student stated: "*I think it would be better to have a study buddy group of about two people.*"

RQ3: How Effective was the Online Teaching Delivery in Developing Students' Skills and Attitudes Related to the Goals of Sustainable Education?

Students' responses suggest that live vocabulary learning on Zoom was ideal for enhancing cooperation among students and drawing on interdependence as well as creating a sense of responsibility among the group members. Online study buddies contributed to minimizing students' isolation by creating a sense of community among them. Support and cooperation were also themes reported by students, thus achieving an important goal of sustainable education within the online learning environment. This line of thought is expressed by the following feedback from a student: "*Because we can work hard and encourage each other and cooperating with each other.*"

Through interactive learning, students could share ideas and broaden their understanding,

which encourages them to be responsible thinkers for a sustainable future: "*I think discussing with my class members was good. I could learn different ideas.*" Another student agreed with this point: "*What I liked about this course is that we can know many ideas and views of other students.*" The same idea about student interaction was also expressed in a classroom observation note: *"Students were placed in breakout rooms four times during the session, allowing them the chance to interact with each other and broaden their understanding with both controlled tasks and freer tasks.*"

In addition, online learning helped students to strengthen their cognitive and social presence to foster the skills necessary for building international partnerships in the future. Based on the community of inquiry (CoI) model (Garrison, Anderson, & Archer, 2000), cognitive presence, social presence, and teacher presence are the three important elements of effective online learning. Cognitive presence refers to a community of learners who are able to construct meaning through sustained communication. It develops when students cooperate in order to explore, construct, and confirm their understanding of the content (Garrison & Arbaugh, 2007). This is reflected in some of the comments by students: "*...because I've deepened my understanding by checking my buddy's answers."* As another student explained: *"I think it is better to learn with our Online Buddies because we can get more ideas from them.*"

Social presence is "the ability of participants in a community of inquiry to project themselves socially and emotionally as "real" people through the medium of communication being used" (Garrison et al., 2000, p. 94), reflected by the following student comment: "*I liked to talk with everyone and listen to their opinion. By writing and looking at essays and discussion, I could know everyone's thinking or favorite things.*" Interactions between learners contribute to the socio-emotional connections that create social presence.

Further, teaching presence consists of planning and facilitating the discourse. Also, it can greatly impact students' cognitive and social performance as well as shape the community of learners (Garrison & Arbaugh, 2007). The following excerpt from a classroom observation note illustrates this point, related to online interactive learning: "*I was also impressed by the way you responded to the students with questions and/or comments which would expand the topic or deepen their understanding of the topic.*"

Another classroom observation notes highlighted teaching presence that fostered students' intercultural awareness when learning English. The observer stressed the importance of a positive and warm teacher attitude, good classroom management, and an interest in encouraging thought about different cultures as well as language learning.

Conclusion and Implications

In our globalized world, sustainable development goals are stressed to build a better future and achieve sustainability. To do this, we need to work on global issues while cooperating with each other and tackle the problems we are facing in the world. The results of this study show that various benefits and outcomes of online teaching delivery can be linked with sustainability. These relate to both sustainable education in times of emergency and the broad themes of sustainable education promoted by MEXT. The 2020 COVID-19 pandemic acted as a driver for innovation, with teachers having to quickly make decisions on how to deliver courses and classes while being unable to operate in traditional classroom settings. The solution to the problem was flipped learning. This involved the use of videoconferencing software as a means of providing the traditional social interaction of the classroom in combination with a learning

management system that allowed both self-study and the sharing of written and audio work.

In relation to sustaining education in times of emergency, by organizing students into out-of-class study-buddy groups and through creating small-group work in videoconferencing sessions, it was possible for students to interact. By doing so they developed connections and friendships through working on focused tasks such as discussions and vocabulary-development games. In some ways, videoconferencing gave students more avenues for communication than a traditional classroom. For example, students could communicate with the teacher through a chat function. In a period of globalization and climate change, in which there are both the increasing risk of pandemics and of extreme weather events, the results of the questionnaires indicate that education can be sustained effectively through videoconferencing and learning management systems.

In the broader context of sustainable education, three aims of the course were cooperation, responsibility, and interdependence. The results of the data analysis show that "study buddy" groups, working within the structured environment of a course, helped to address these aims. From a Vygotskyan perspective, they provided many opportunities for peer learning, with students working together to check answers or learn content from each other, which motivated them to study. This was particularly evident in writing classes, in which students were expected to write for each other. They were able to gain an understanding of how others think as well as their interests, and this could be deepened by the teacher's contributions in more collective discussions. The integration of asynchronous writing tasks on a learning management system also helped to foster a sense of responsibility and interdependence. In contrast to a more traditional approach in which students submit work to a teacher for marking and correction, students knew that they would read and comment on each other's writing. Therefore, it was important to meet deadlines in order to contribute to class activity. Consequently, students were involved in both synchronous discourse in planning to write, and asynchronous discourse in which they shaped and deepened their ideas through writing for others. This form of deep learning is promoted by MEXT to achieve the goals of sustainable education. The interweaving of videoconferencing with a learning management system created the environment for both types of discourse.

In terms of cultural awareness, one student noted that the speaking course was like traveling around the world. While this may relate more to course content, which involved units based on fictional students traveling in a variety of countries, it can also be explained partly by discussions in conjunction with the use of presentation software and links to video. The advantage of using videoconferencing was putting presentations on screen. Although Japanese universities have very good technology in classrooms, setting up presentations is often more complex, involving lowering screens, closing blinds, and dimming lights. There was much greater immediacy to presenting online. This could be supplemented by the careful selection of video links to YouTube on the learning management system that provided footage of settings used in the presentations and online content.

Regarding implications for the future, a number of possibilities emerge. These relate to the range of courses universities may offer and the use of technologies for sustainable education. The current situation of the COVID-19 pandemic has accultured many teachers and students to the use of technologies for online learning. This acculturation is likely to be used in several ways in the future: as a resource in times of emergency or disruption; for courses involving students in different locations; and for new hybrid models.

In the COVID-19 pandemic, videoconferencing software was used as a substitute for the classroom environment. The data indicate that online courses can be delivered successfully through good teacher management of students in conjunction with videoconferencing software and learning management systems. For courses that are primarily taught in classrooms this offers a resource for disruptions due to weather events or more individual problems. Rescheduled classes can be taught online, especially where this involves a weekend, freeing students and teachers from the necessity of travelling to a classroom.

Although the main form of classroom delivery for the future will be classroom-based, some courses may be offered online through videoconferencing and learning management systems, particularly where international students are involved. From the perspective of global citizenship and appreciation of cultural diversity, English language courses benefit from the participation of students from differing backgrounds. Due to travel restrictions, some students have been unable to travel from their home countries, but have been able to participate in classes online. Videoconferencing technologies and learning management systems now offer a much greater opportunity for international student exchange. Because students from various countries can participate in joint projects, discussions, and problem solving, intercultural discussion will contribute to the government's idea of "Think globally, act locally" (MEXT, 2016, p. 4), and improve the quality of learning.

With the return to classrooms, an important question is how technology will be combined with social interaction in the future. The most likely result is a model in which some of the innovations that emerged in the time of the pandemic become integrated into classroom-based courses. In this article the focus has been primarily on social interaction through videoconferencing, but this has been supported by carefully constructed materials on a learning management system, which is complementary software for either classroom-based learning or learning through videoconferencing. Particularly in Japan, where ownership of smartphones is very extensive, students all have Internet access in the classroom through these devices.

Another possibility is a hybrid model which combines on-site learning with videoconferencing to create an inclusive intercultural classroom. In terms of sustainability, it can be extended beyond a course to a whole study-abroad program, and so offers the possibility for a university to broaden its connections with other institutions of tertiary education across the world. Although, there might be challenges such as the time difference between the local students and international students, they can have access to and take part in education more easily. Such internationally joint hybrid classes can create more intercultural classrooms which contribute to international cooperation in our globalized world.

Finally, this article has had a focus on the importance of social interaction in the learning process, particularly through peer interaction, and the development of communication skills in English through writing and speaking. What has emerged from the data is that current technologies can be used to augment such learning, creating an environment where skills are developed through tasks and interaction that is focused on meaningful exchange, and so aid in achieving the aims of sustainable education.

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"Where am I?" A Critical Discourse Analysis of Religious Representation in Indonesia

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Abstract

The Indonesian Ministry of Education has re-examined the Indonesian curriculum to address the present challenges, including how to promote tolerance in students who live in a multicultural country. Textbooks and characters presented in Indonesian elementary textbooks, Buku Siswa, are part of continuous revision. However, there is insufficient consideration placed in the characters presented, including which characters are included and excluded. In fact, understanding which characters are presented means that people learn how to construct phenomenon. As a country with diverse beliefs, the Indonesian education system inserts religion as a mandatory subject, aiming to promote the values of diversity. Nevertheless, the goal of such implementation does not always meet the outcomes since there are conflicts that occur due to religious beliefs. The study aims to examine power relationships and the ideological nature of discourse that is represented by seven characters in Buku Siswa by utilizing Critical Discourse Analysis. Buku Siswa is a series of elementary school textbooks that has different levels and themes. Findings reveal that characters that represent minority religious groups are missing from learning materials, which presents them unequally compared to characters that presents the majority of religious groups. The study argues that representation is a way of respecting people.

Keywords: critical discourse analysis, Indonesian elementary textbooks; religious representation

Even though Indonesian curriculum has continuously been revised to meet the current needs (Wahyuni, 2015), there is limited attention paid to the relevance of characters presented in Indonesian elementary textbooks taught across school age levels. The majority of elementary textbooks provide imaginary characters. For instance, there was only one group of children presented in textbooks published in the 1990's (Alim, 1996) without any significant connection to the students' identity such as religious or personal identity. Textbook producers' goals for elementary students' learning largely consists of questions geared toward reading for rote memorization (Apple, 2004). Students were rarely given an opportunity to position themselves within an "as if" storyworld and start interpreting "as if" characters' lives in connection between themselves and others' everyday lives (Enciso and Davilla, n.d). To put it another way, students are not challenged to analyze the characters presented in textbooks. In fact, reading is a matter of studying the real world in which students are living inside of, as the history has been perpetuated (Freire, 1985).

Moreno-Fernández et al. (2019) emphasize, "The significance of textbooks' representation of the society as, in most cases, they lay the foundations for the way lessons are developed and are the guiding materials for the daily routines in the classroom" (p. 81). Representation is a way to formulate a phenomenon presented by establishing a relation between two objects through symbolic communication (Mitchell, 1990). It also means that people's presence is acknowledged (Bartz & Bartz, 2018). The present study focuses upon representation of religion in Indonesian elementary student textbooks. In particular, the study illuminates religious representation of characters, through examining the ideological treatment of their identity, as diverse human beings who live on Earth. I argue that any form of representation is a matter of respecting people, regardless of their identity, as human beings who live on Earth because people will feel more accepted when their religion is presented in textbooks.

In the published 2013 curriculum, the publishers and the Indonesian Ministry of Education considered presenting diverse characters in Indonesian elementary textbooks, Buku Siswa. In the Buku Siswa there are seven main characters with various skin tones and hairstyles. Some of them have light skin color and one character has dark skin color. Additionally, the publishers and the Indonesian Ministry of Education emphasize religious representation among the seven characters. One of the characters, named Siti, wears a hijab as part of her religious enactment as a Muslim. In Indonesia, Muslim is the largest religious population (Ministry of Religious Affairs Public Relations, Data and Information Bureau, 2017). People who are part of a major religious group gain more social power (Van Djik, 1993) than people from a minor religious group.

Those with power control the hegemonic ideas and worldviews of a society (van Dijk, 1993). As such it is imperative to critically examine the Indonesian Ministry of Education's representation of religion for reproduction of ideological dominance. This raises two questions: 1) What knowledge about religious representations are constructed in Buku Siswa? 2) Whose perspectives are valued in the process of scaffolding knowledge presented in Buku Siswa? As such this study analyzes a series of Buku Siswa taught in second grade level.

The (Religious) Diversity of Indonesia: Social Context

Indonesia is a multicultural country with 1331 ethnic categories, 719 local languages, six religions, and other beliefs. The six religions are Islam (87.2%), Protestant/Christian (7,0%), Catholic (2.9%), Hindu (1.7%), Buddhism (0.7%), Confucian (0.05%), and others (0.5%) (Badan Pusat Statistik, 2015, data reflective of 1991 to 2017). Others belief systems are defined

as *aliran Kebatinan* that are not recognized by any official religions. *Aliran Kebatinan* is defined as "mysticism, the penetration and the knowledge of the universe with the purpose of establishing a direct relationship between the individual and the sphere of That-Which-Is-Almighty" (Mulder, 1970, p. 105). The percentage of combined belief systems and religions was updated in 2010 following a census that is conducted every 10 years.

In an educational context, presenting religion as a subject was contested. Suhadi et al. (2015) explained that soon after independence, in 1945, the Indonesian government established the Ministry of Education, Instruction and Culture to bring "religious instruction" (the term used at the time) to the government's attention. They described one of the articles in the first Indonesian Education Law as stating that religious instruction was a choice and not yet a mandatory subject in the era of "guided democracy" (Demokrasi Terpimpin) which lasted from 1959 to 1965. Nevertheless, religion was a mandatory subject (from elementary to university level for the first time) in the rise of Suharto's era, also called the New Order era in 1965. Since presenting religious education was a new policy, there was criticism that introducing religion to children should be parents' responsibility (Suhadi et al., 2015). Suhadi et al. added that the debate of presenting religion emerged from 1973 when religious education was proposed to be an optional subject again at the People's Consultative Assembly (Majelis Permusyawaratan Rakyat) until early 2000s. However, religious education remains a mandatory subject in public schools even today and people rarely hear any criticism to eliminate it in public schools.

Even though debates of inserting religion as a subject in public school have ended, the implementation of religious education that aims to promote reflection and internalization of diverse values (Suhadi et al., 2015) seems far away in the Indonesian pluralistic society. Suhadi et al. argue that although religion became a mandatory subject, the implementation on how to value differences is weak because the curriculum consists of too much content about doctrine and there is lack of reflection on valuing diversity. There has been numerous religious conflict (Nurhidayah et al., 2018) across the nation in which dominant religious groups use their power to oppress minority religious groups.

For instance, there was a Christian – Muslim conflict in the 1950s, in which several churches were burned in Singkil, Aceh, Indonesia (Jones, 1976). In 2012, the same conflict happened in the same province, Aceh (Ahnaf et al., 2015). The majority of people in Aceh claim themselves as Muslim. The percentage of Muslims (98%) is bigger compared to Christians (1%) (Ministry of Religious Affairs Public Relations, Data and Information Bureau, 2017). Moreover, Aceh is the only province in Indonesia that enforces *Syariat* Islam (Islamic law). The conflict about religion in Aceh happened because some radical groups in Aceh believed that Christians obtained illegal permission to build a church. As a consequence, some conservative and radical groups viewed all activities done by Christians as illegal activities. Moreover, any type of activities done by the Christians could be a source of conflict for radical groups, such as *Front Pembela Islam* (FPI). Too often, this sensitive issue was used to justify discriminative action.

Another religious conflict occurred in Tolikara, Papua, Indonesia. Unlike Aceh, Papua is one of provinces in Indonesia with the largest population of Christians. The percentage of Christians (65%) is larger compared to Muslims (15%) (Ministry of Religious Affairs Public Relations, Data and Information Bureau, 2017). The conflict occurred on July 17, 2015 when Christians attacked Muslims, who were in Eid prayers, and burnt the mosque as the follow up action (Nurhidayah et al., 2018). The reason that the Christians gave for buring the mosque was because on July 13–19, 2015 they had wanted to organize an international seminar. The Christians argued that they did not want any other religious celebration on that day. Even

though these examples cannot be used to generalize religious problems in Indonesia, what happened in Aceh and Papua exemplify that dominant religious groups have more power than minor religious groups and the dominance perpetuates social inequality. Arguably, religious knowledge presented in schools fails to emphasize the value of diversity.

As such, there is a need to critically examine the knowledge depicted in textbooks and school curricula. We need to examine what and whose knowledge has been normalized (Foucault, 1980) and less valued by social institutions. As Sensoy (2014) argues, "our capacity to simply imagine the range of mundane life experiences of various groups is in part determined by the scripts and characters that we have been most socialized, through repetition, to see as normal" (p. 303).

Literature Review

There have been a number of studies about Indonesian textbook analysis across grade levels. The study of Fitriyani (2013) investigates how the Indonesian English textbook used for seventh grade is relevant to achieve the goals of the present curriculum. Fitriyani conducts a textbook analysis and thematic coding. One of the findings reveals that there is repetition of the content of the textbook. Additionally, Parlindungan et al. (2018) examined Indonesian cultural diversity and whose cultures are represented in middle school English textbook titled "When English Rings a Bell". Using a semiotic approach to analyze textual and non-textual representations of cultures, the study's finding revealed that the 2013 English textbooks for grades seven and eight permeated Indonesian cultural diversity. Moreover, the authors suggest the importance of inclusive representation of the richness of Indonesian local culture in a more salient manner, especially to the minority groups.

In elementary levels, first through sixth grade, two studies were found analyzing the Indonesian elementary textbooks for second graders according to the thematic approach. Kusumawardani's study (2017) aims to describe the interconnection of the textbook in the second semester. The findings of this study demonstrate that the textbook for second graders has been combined among three or four subjects. Additionally, there were dominant interconnected models such as model webbed, threaded, and integrated in which several indicators are not fulfilled. Likewise, using quantitative methodology, the study of Jannah (2015) investigated the Indonesian elementary textbook for second graders (theme one, sub theme *Hidup Rukun di Rumah*) to examine four points:

- to what extent the indicators of materials are relevant to the learning activities
- to know the relevance between learning activities and integrated approach
- to know the relevancy between learning activities and scientific approach
- to know the relevancy between the assessment in textbook and assessment in 2013 curriculum.

Research has found that there is a need to analyze the representation of characters presented in Indonesian elementary textbooks for second grade. Though the analysis of the study conducted by Parlindungan et al (2018) is about textual and non-textual representations of Indonesian cultures in middle school's textbook, this study does not analyze to what extent the portion of majority or minority groups are presented in English textbooks. Thus, my research aims to contribute to the body of literature through the examination of the characters presented in second grade textbooks by using critical discourse analysis perspective.

Theoretical Framing

This study draws upon Critical Discourse Analysis (CDA) as a theoretical framework. CDA focuses on the reproduction of social power and dominance (van Dijk, 1993). Chu (2015) argues that dominant groups who have more access to the public domains gain more control to apply and validate their discourse in social institutions, including schools. The dominant groups within society are able to maintain power because other groups have limitations to acquire and use resources such as language, knowledge, and money for social mobility (Yosso, 2005). The dominant discourse then becomes a common rule when there is no significant link to a specific group from which it originates (Fairclough, 1989).

Van Djik (1993) explains the theory of power and dominance that can be measured by their control over (access to) discourse. "Control over certain discourses can lead to the acquisition of social goods (money, power, status) in a society" (Gee, 1989, p. 19). When a religion is positioned as dominant, it automatically has social power (Van Djik). Van Djik argues, "Social power is based on privileged access to socially valued resources, such as wealth, income, position, status, force, group membership, education or knowledge (p. 254). In the present study, an example of gaining access to socially valued resources (education) is the opportunity for several religions not only to be presented but also portrayed as main characters in textbooks.

By analyzing textbooks from the critical perspective, teachers and students are expected to examine how knowledge is constructed through the characters that are presented in textbooks. Having such understanding guides them to understand how power operates in society. As Enciso and Davilla (n.d) argue, "Understanding social equality means delving into the histories and frameworks that help us understand how ordinary people have exercised power and agency to produce social change and equality (p. 3)". Furthermore, students are engaged in the process of doing critical analysis that guides them to understand how they perceive social issues from multiple perspectives (Chu, 2018). My role as a critical discourse analyst specifically in this study and more generally in society is to make a significant contribution in order to obtain more insight into the essential role of discourse in the reproduction of dominance and inequality (van Dijk, 1993).

Elementary Textbooks in Indonesia

The main books taught in elementary level are Buku Guru and Buku Siswa. These books are written and composed by authors, working together with a specific team under the coordination of the Ministry of Education. Buku Guru is a guided book for teachers that consist of several explanations on how to teach materials through a topic covered in each semester. Also, there are indicators of success for each subject. Similarly, Buku Siswa contains guidance, short imagined series of stories, and activities for students to engage in the learning process. The stories are the authors' imaginations that may not all students would have experienced in their own lives. Furthermore, "Buku Siswa is designed to stimulate students' imagination and interest by having full of pictures and colors" (Buku Siswa, 2017, p. iv).

This study analysis a series of eight textbooks (second edition, published in 2017), taught for second graders. These textbooks are connected in terms of characters and themes. To make it clear, there are seven characters presented in second grade's textbooks (Picture 1). The students' characters are named Meli, Udin, Beni, Dayu, Lani, Siti, and Edo. Besides characters, the textbooks are also connected in terms of themes. Each textbook's themes are: Live in Harmony, Play in My Community, My Daily Duties, Live in A Clean and Healthy

Environment, My Experience, Take Care of Animals and Plants, Togetherness, and Safety at Home and During Travel.

Methodology

To examine what knowledge about religious representations are constructed in Buku Siswa and whose perspectives are valued in the process of scaffolding knowledge presented in Buku Siswa, I use case study research to iteratively construct and analyze data. This method allows me to investigate data carefully. I bound my case with religious representation as main analysis and the seven characters presented in textbooks as substance of analysis (Thomas, 2015).

I downloaded the eight textbooks from the Buku Sekolah Digital's (BSD) website. BSD is an online application to download the e-books for free. This online application is an official program provided by the Departemen Pendidikan Nasional Indonesia (Indonesian Department of National Education), which aims to fulfill the need of digital books from elementary to high school level (*Koleksi 2500 Buku Sekolah Digital (Buku BSE), Koleksi Buku KTSP 2006, Kurikulum 2013 dan Kurikulum Nasional*, n.d.). BSD provides 2500 digital books including financial books, elementary textbooks, anti-corruption comics, educational comics, and many more. For the purpose of this study my focus of analysis is the digital textbooks.

I selected textbooks for second graders as a specific case because it was part of the early elementary levels (from first, seven years old, to third grade, nine years old). Furthermore, textbooks for second graders provide applicable examples of the values of Pancasila, as the official philosophical foundation of the nation. Pancasila consists of five principles presented through five different symbols for each principle in which people learn the values of social justice. Meanwhile, textbooks for first grades provide basic lessons about the symbols of Pancasila.

To unpack the values behind the images in second grade Indonesian elementary textbooks, I utilize a semiotic approach to religious representation (Kress & Van Leeuwen's, 2010). Drawing upon social semiotic theory of representation, the key point about semiotics is the "sign" (Kress & Van Leeuwen). In conducting the analysis of images, there are components ("signifiers" such as color, perspectives, line, and how these components are used to realize meanings or "signifieds") that contribute to the process of sign-making (Kress & Van Leeuwen, 2010). As social semioticians, Kress and Van Leeuwen (2010) provide three metafunctions as a key heuristic: the ideational, the interpersonal and the textual. The ideational metafunction is realized through the investigation of image structure, which describes objects, events, participants, and other relevant circumstances. The interpersonal metafunction is visual resources that can represent specific social relation between the producer, the viewer, and the object represented. The textual metafunction is the compositional arrangement of images. Central to this study is ideational metafunction in which the aim is to represent the world around and inside us.

Data Analysis

I analyzed the textbooks based on the aforementioned critical discourse perspectives. Critical discourse approach examines power relationships, the ideological nature of discourse and how social roles are acquired, enacted, transformed on discourse's role in power production and reproduction (Fairclough, 1992; Gee, 1989; van Dijk 1993). Critical discourse scholarship takes an explicitly political stance and highlights social inequality and injustice (Lazar, 2007).

Moreover, critical approaches to discourse allow people to understand that discourses speak through individuals (Gee, 1989). The problem considered in this study is unequal religious representation of seven characters in second grade Indonesian textbooks. Critical discourse scholars argue that discourse is socially shaped and socially shaping (Fairclough, 1992). The data, eight textbooks, chosen for the analysis in this study are examples of how discourse served as a means of communicating the distribution of power and hierarchical structure of society (Gee, 1989).

Fairclough (1992) presents a specific method in using Critical Discourse Analysis (CDA) so that critical discourse analysts interpret, describe, and explain. He puts forth the process of CDA, "from interpretation of the discourse practice (processes of text production and consumption), to description of the text, to interpretation of both of these in the light of the social practice in which the discourse is embedded" (p. 231). The analysis provided in this study performs in a similar way.

My design consists of analysis of eight textbooks. I generated data by skimming the eight textbooks and looking for cruces points in which I found an unequal religious representation. I searched for the main character presented in each textbook by carefully reading pages that contained information about the characters. I chose focal points where discourse seemed to be in conversation. From there, I found that there is one character presented in each textbook, as the main character, followed by the rest of the other six characters as supplemental characters. Next, I searched for each religious character's background by analyzing their physical appearance, religious artifacts, and activities found in specific pages across the eight textbooks. I then related to macro (group or institutional power and dominance, social inequality) and micro (text, talk or communicative interaction) or vice versa (van Dijk, 1993). It is essential to note that the characters can be found in Indonesian textbooks across school levels, including elementary and middle school. However, I only analyzed the characters' religious backgrounds according to information available in the eight textbooks in second grade level. As additional information, there was no explicit information provided by the publisher or the writer about each character's background. I explained each character's background based on appearance and other visual information (Kress & Van Leeuwen, 2010) provided in specific pages of textbooks. The following pictures are the screenshot of specific pages about characters' religious background that served as the corpus of data.

Figure 1

Depiction of characters in Buku Siswa (Textbook theme, 1 p. v)

Get to Know Me: Hello, My Name Is …

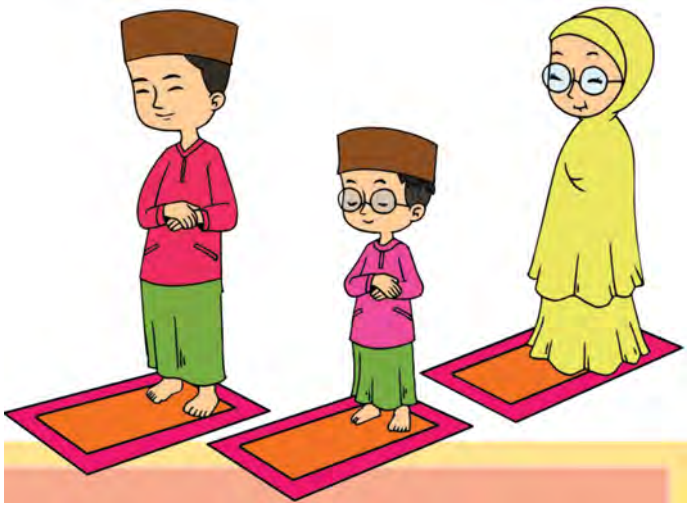
Meli: (the most left student, Figure 1) who has pigtails hairstyle, light skin tone, and a round face with single-folded eyelids represents a Chinese descendant. It can be seen from picture 2, the right-bottom picture, that she is holding a joss stick and praying in front of a Confucian statue. In Confucian, joss sticks are one of artefacts used to pray. Thus, it can be interpreted that Meli represents Confucian.

Figure 2
Religious Traditions (Textbook Theme 1, p. 14)

Udin: (second student from left, Figure 1) is a character who wears glasses. It can be seen from Figure 3 (below) that his mother wears a hijab. Figure 4 shows that Udin is praying with his family in Islamic liturgy. It can be interpreted that Udin grows up in a Muslim family and identifies himself as a Muslim student.

Figure 3
Udin's Family (Textbook Theme 1, p. 2)

Figure 4
Islamic Prayer (Textbook Theme 8, p. 48)



Beni: (third student from left, Figure 1) has light skin and straight hair. From Figure 5 (below) bottom-middle picture, it can be seen that there is a boy who has light skin and straight hair is praying in Buddhism liturgy. From Figure 6 number 6 it can be seen that the boy with light skin and straight hair, is participating in Bible reading. Thus, there is unclear information whether Beni is Buddhist or Christian.

Figure 5
Religious traditions (Textbook Theme 1, p. 14)

Figure 6
Daily activities (Textbook Theme 5, p. 81)

Dayu: has straight hair and wears a headband (middle student, Figure 1). According to how Balinese depict nicknames in general, Dayu is a short name of "Ida Ayu". In Bali, people may notice from the name whether they are male or female. Additionally, according to the Ministry of Religious Affairs (2017), Bali is one of many provinces in Indonesia with the largest Hindu population (83.4%). In this province, the name represents the caste system. For instance, females who are from the Brahmin caste use the name of Ida Ayu as their initial name. It can be interpreted from the name that Dayu represents a girl student from Bali who identifies herself as a Hindu. It can be seen from figure 7, number 4 that a girl who wears a headband was praying in a Mandir / Pura / Candi (temple).

Figure 7
Daily activities (Textbook theme 5, p. 17)

Lani: (third student from right, Figure 1) has the lightest skin among other characters, a round face without a double eyelid, and a pink hair accessory. Lani represents a Chinese descendant. From Figure 8, the top-right picture, it can be seen that she goes to church with her family. She may represent Catholic or Christian.

Figure 8
Religious traditions (Textbook Theme 1, p. 14)

Siti: (second-right student, Figure 1) as it can be seen from the students' appearance on the Figure 1, Siti represents a Muslim girl who wears a hijab. From the religious artefact worn by Siti and her mother, it can be interpreted that Siti is raised in a Muslim family (Figure 9) and identifies herself as a Muslim.

Figure 9
Siti and her family (Textbook 3, p.3)

Edo: (the far right student, Figure 1) has darker skin and curly hair. Figure 10 reveals that Edo tells his friend to go to church. It is not clear whether he wants to go to Christian Church or Catholic Church. Thus, it is also unclear whether Edo is Christian or Catholic.

Figure 10
Edo's Conversation with his Friends (Textbook theme 1, p. 66)

Table 1 (below) summarizes the names and religious main characters presented in each textbook. When they serve as the main characters, it means that their daily narratives dominate the textbooks.

Table 1
Summary of the Names and Religious Main Characters

	Textbook Theme 1	**Textbook Theme 2**	**Textbook Theme 3**	**Textbook Theme 4**	**Textbook Theme 5**	**Textbook Theme 6**	**Textbook Theme 7**	**Textbook Theme 8**
Name of the main characters	Udin	Beni	Siti	Dayu	Beni	Lani	Siti	Udin
Characters' religious background	Muslim	Christian/ Buddhist	Muslim	Hindu	Christian/ Buddhist	Christian/ Catholic	Muslim	Muslim

Where am I?

It can be seen from the table that there was an unequal representation of characters among eight textbooks. There were 5 characters (Udin, Beni, Siti, Dayu, and Lani) presented in eight textbooks. Udin was presented in textbook theme 1 and theme 8. Beni was presented in textbook theme 2 and theme 5. Siti was presented in textbook theme 3 and 7. Dayu was presented in textbook theme 4. Lani was presented in textbook theme 6. The characters of Meli (Confucian) and Edo (Christian or Catholic) were missing or not presented as the main characters in any textbooks. As there were only 5 characters (Udin, Beni, Siti, Dayu, and Lani)

represented as main characters in the second-grade textbooks, there is woeful misrepresentation of religious diversity of Indonesia. According to the Ministry of Religious Affairs (2017), there are six religions and other beliefs acknowledged by the Indonesian governments. Udin and Siti are characters that represent Muslim, Dayu is a character that represents Hindu, and Beni is a character that may represent Christian or Buddhist. As such, the representation of Confucian and other beliefs is absent. The seven characters should have represented the religious diversity of Indonesia. However, since there are eight textbooks, the authors have doubled the representation of three characters (Beni, Udin, and Siti) without providing obvious reasons of doubling the representation. For students, examining which characters are presented doubled, allows them to engage in critical analysis of how certain religions have exercised power (Enciso & Davilla. n.d).

Indeed, the characters Muslim, Christian, Catholic, and Buddhism were presented as main characters while the rest (Confucian) was presented as additional subordinate characters. Table 1 shows that Udin, Beni, Siti, Dayu, and Lani are the main characters presented in each textbook. For instance, Lani (Christian or Catholic) was presented as the main character in textbook theme 6. Others were presented as Lani's friends who accompanied her playing or studying. From theme 6, Lani's daily activities were presented more frequently than the additional characters. This finding speaks to the issue of unequal power among religious groups. Also, they should engage students in critical discussion about how certain religions gain privilege when presented as the primary characters.

Lastly, the representation of Muslims dominates the eight textbooks. The table demonstrated that there was a repetition of two Muslim characters (Udin and Siti) presented in textbooks as the main characters. The character of Udin was repeated in textbooks theme 1 and theme 8. Similarly, the Muslim character Siti was repeated in themes 3 and 7. As such, the Muslim characters were presented four times in second grade textbooks. This particular finding suggests that people who believe in the dominant religion are accorded more social power and privilege (Van Djik, 1993) in social institutions including education, than those who practice minority religions.

Discussions

The study's finding suggests that in using textbooks, teachers need to pay more attention to the characters presented. Teachers may engage students in critical examinations of how semiotic modes (such as images) are used to convey control and social position (Kress & Leeuwen, 2010). Furthermore, since the characters are presented across school levels, teachers, educators, authors, publishers and caregiver of students would do well to introduce critical thinking skills, question stereotypical representations of minority groups, and challenge the knowledge in textbooks and other curricular materials (Chu, 2015). Critical thinking guides students to understand how their world is read through words, texts, and images (Freire, 1985). As Enciso and Davilla (n.d.) argue, "Classrooms are social and political spaces where social narratives and histories of knowing, being, and acting are integrated into ellipsis literature selection" (p. 16). Thus, students and teachers can gain understanding about the importance of curricular materials, as school is a place to not only reinforce social justice but also to plant and nurture the seeds of social transformation (Sensoy, 2014).

As a native Indonesian scholar who believes in respecting all people and their belief systems for the purposes of social justice, I have tried to show how minoritized religious groups are missing from educational materials. When people acknowledge the importance of religious

diversity, they honor all people's lives and presence. Drawing on a bigger scale, I have found that hegemonic groups control the school curriculum in Indonesia. I have also demonstrated that it is crucial for children to feel represented in the literature.

Suggestions

The present study examines the religious representation in Indonesian elementary textbooks by looking at what knowledge about religious representations are constructed and whose perspectives are valued in the process of scaffolding knowledge presented. Through this analysis, I hope Indonesian elementary students learn respect and tolerance in a meaningful way so that they can value the diversity and richness of the narratives in Indonesian culture from both dominant and minority groups. Textbooks, like Buku Siswa, contribute significantly to students' understanding of current phenomenon. Thus, there is a need to scrutinize and unpack learning materials used in schools globally as a way to challenge dominant narratives (Chu, 2018). Future research should also consider examining the learning materials from all grade levels, especially when there is a continuum topic or characters presented. This includes the analysis of race, gender, and other dimensions of differences.

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Note
There are multiple authors for the series of Indonesian elementary textbooks, Buku Siswa.

Data Availability Statement
The data that support the findings of this study are openly available in Buku Sekolah Digital.com at https://bsd.pendidikan.id/bsd.html.

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No Campus Life for Us: Personal Reflections of First-Year Students at a Malaysian University

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Abstract

The purpose of this qualitative study was to look into the online learning experiences of first-year communication and media students. The study was conducted by gathering 45 written reflection papers from first-year undergraduate students covering their opinions, challenges, and feelings about online learning. NVivo 12 was used to analyse the contents of these reflection papers. The findings of this reflective narrative study offer valuable insights into how first-year communication and media students perceive online learning classes in higher education, the challenges of working with new virtual classmates, the adjustment and role as student and daughters at home, as well as their mental health and emotional feelings towards online learning. Students learned vital lessons about time management, environmental awareness and independence as a result of these experiences. Students experienced anxiety and were demotivated as a result of the lack of face-to-face interaction and effective self-introduction with new peers. Most importantly, they were dissatisfied because they had lost out on the experiences of living on campus during their first year of study. Furthermore, this research looked into another component of the qualitative technique, which is a reflective method to study the first-year students' experiences with online learning in a Malaysian public university, an insight that can be useful for both lecturers and students.

Keywords: COVID-19, higher education, learning adjustment, online learning experience, qualitative research

On 11 March 2020, the World Health Organization (WHO) declared that Coronavirus disease 2019 (COVID-19) is a pandemic. According to WHO, the term pandemic can be understood as the "global spread of a new disease". The official declaration by WHO was a turning point for most governments around the world to shut down some of their industries including the education sectors. The COVID-19 crisis resulted in major disruption in the operation of schools and universities, particularly those affecting students' learning and assessments. The decision was implemented as a preventive measure to combat the spread of the virus. In response to this pandemic, online learning has been the first alternative to embrace the new ways of learning. Many universities around the world positioned online learning or E-Learning as a form of distance learning or distance education based on the use of digital technologies to access educational materials via email, chat, audio and video conferencing; delivered over computer networks to enable or facilitate the learning process (Nguyen, 2015; Aparicio et al., 2016).

According to Rodrigues et al., (2015), the main goal of e-learning is to provide interactive learning and a supportive environment for students with personalized, learner-centred, open and enjoyable learning processes. With online learning, physical attendance at a university or school is no longer needed, but both educators and students must have a computer or technological device to maintain the learning process. Besides, the technological device, technological competencies among students and teachers and internet connection are among matters that needed to be emphasized when virtual classes were implemented (Almusharraf & Khahro, 2020). In Malaysia, the closure of universities and the emergence of online learning during the pandemic created a new gap or digital divide between privileged and underprivileged students. Privileged students here refer to those who have stable and better access to an internet connection to pursue their online classes, while the underprivileged students may refer to those who experienced a lack of internet access in their area or technological devices due to the poor family economic status.

Literature Review

During the first phase of the movement control order (MCO) in Malaysia, there was a controversial issue about how online learning could be a great disruption to underprivileged students like Veveonah Mosibin. In June 2020, Veveonah Mosibin, an 18-year-old, public university student who lives in a remote part of the eastern state of Sabah shared her experience on Youtube, as she had to sit for her examination on a tree to ensure a strong connection (Tse Yin Lee, 2020). The aspirational story of Veveonah's experience went viral and has been viewed hundreds of thousand times by netizens. This has reflected how internet connectivity is a problem for many students living in some rural areas in Malaysia. Unlike those in developed countries, the education system in Malaysia is still adapting to this method of learning (Bartley & Golek, 2004; El Said, 2021). During the early phase of the pandemic, most highly affected countries such as China, South Korea, Italy, and Iran have already adopted online learning platforms to ensure the continuous learning process (Tam & El-Azar, 2020). It involves many levels of education from pre-schools, primary schools, secondary schools to higher education institutions.

As a result of this turn in events, the COVID-19 pandemic has led to much research on online learning experiences which focus on the effectiveness and satisfaction of online learning, online assessments as well as students' perceptions and the challenges of those that range from primary schools to higher education institutions (Almusharraf & Khahro, 2020; Nguyen, 2015; Valverde-Berrocoso et al., 2020). However, there is another interesting aspect of the online

learning experiences which will be explored in this study, the experiences of first-year undergraduate students.

Entering the university is one of the biggest life transitions for many school and college leavers. Traditionally, new students or "freshies" will have the induction or orientation week to familiarize themselves with the campus activities, library, courses and surroundings (Collins & Dodsworth, 2011). The orientation week serves as a welcome week which is usually conducted a week before the semester starts. The activities during the orientation week are crucial to assist new students in their transition or adjustment into campus life and which could lead to a positive impact on academic performance (Georgina et al., 2014). At the same time, students also have fun and get to know their course-mates who potentially will be their friends who help them to settle in as university students.

There are limited studies focusing on these students' online learning experiences during COVID-19. The most recent work in this area centres around the Nursing Students' Perceptions and Experiences while studying during the global pandemic. The study used qualitative inductive content analysis, and the data was collected using an online form. Findings from 33 reports of undergraduate students showed that as much as students are aware of their responsibility to the community, they are also satisfied with and supported the faculty decision on distance learning which includes the suspension of clinical activities (Lovrić et al., 2020).

In the same vein, a qualitative survey conducted by Hasan and Khan (2020) on online teaching-learning during COVID-19 pandemic has proven that students enjoy the flexibility of online learning. The study also suggested that multiple media presentations and different activities could improve the students' interaction during online learning. However, like many studies, this study also agreed that the most common barriers or disadvantages of online learning are technical problems, poor internet connectivity, the lack of interaction and deficits in educators' basic computer skills (El Said, 2021; Khalil et al., 2020; Nguyen, 2015; Zalat et al., 2021). Another crucial aspect of the experience pointed out by many scholars is the emotional state of students in an online learning environment such as stress, anger and embarrassment (Cleveland-Innes & Campbell, 2012; Faria et al., 2015; Zembylas, 2018; Brookfield, 2006; Lehman, 2006). Furthermore, a recent study found that multiple assignments and long online classes every day contributed to anxiety, insurmountable stress and health issues to the students (Sundarasen et al., 2020).

In the light of these findings, this research attempts to fill the gap by focusing on the perspective and personal reflection of first-year undergraduate students toward online learning during the COVID-19 pandemic. Specifically, this study aims to explore the first-year Communication and Media students into online learning experiences which cover their opinions, challenges and feelings during the pandemic situation. The outcome of this research has significant implications for teaching and learning strategies and emotional support for first-year students in higher education.

Methodology

This qualitative study employed narrative analysis as an approach to analyse the reflection papers of the first-year media and communication students. According to Riesman (2008), narrative analysis is used to understand how research participants construct stories and narratives from their personal experiences. This approach involved a dual-layer of

interpretation that consists of firstly, the interpretation of participants own stories and secondly, the researcher's interpretation of the structure of participants' narratives.

As elucidated by Loseke (2021), narratives can be derived from journals, letters, conversations, autobiographies as well as transcripts. In this study data collection, forty-five undergraduate students participated. First-year communication and media students were assigned to write an open-ended reflection paper using the Google Classroom platform. They were asked to construct their reflections to include their opinions, problems and feelings towards the online learning experience during the pandemic.

Before the students wrote their reflections, they were given three links to online news articles, one from an international newspaper and two from local newspapers. The headlines of the news were related to the online lessons' issues experienced by students during a pandemic. After reading the news articles, students must reflect on their own experiences by writing their reflections online and then submit the report on Google Classroom. The open-ended written questions style of analysis directly influenced the depth of research and determined the manifest approach.

Table 1
The News Headlines from Selected Newspapers

New Straits Time 25 November 2020	Embracing online teaching during the pandemic
The Guardian 3 April 2020	Forget freshies' week: universities prepare to teach new first-years online
The Star 16 December 2020	Online lessons are challenging, say students

Capturing the Narrative Data

As postulated by Sharp et al., (2018) narrative analysis displays the complexities of human experience and reveals comprehension of how people make sense of their lives in the contexts of social, cultural, and historical contexts. The narrative approach entails inquiry concerned with human experience narratives or inquiry that yields data in narrative form. It is also includes the compilation of narratives (stories) from persons or small groups (Butina, 2015). It can be applied to any forms such as documents or written texts, and observations. Furthermore, this form of analysis greatly adds to a better understanding of human perceptions and experiences.

Figure 1
Process of Narrative Analysis

Data was collected during mid-April, 2021 when all higher education institutions of Malaysia had switched to online mode of teaching due to the COVID-19 pandemic. The researchers found that this method allowed the participants to fully convey their internal narratives. Therefore, the inductive methods of narrative analysis were chosen to keep the individual narratives intact. The narratives were then split into smaller pieces and clustered by the theme with other participants statements and were coded by using NVivo 12 software.

Findings

There are three main themes in this narrative analysis. These main themes are 1) student's opinions about online learning classes, 2) the problems faced during online learning and 3) their feelings towards online learning. Under the first theme, besides online learning, another sub-theme that emerged, particularly the home surrounding opposite to the physical class.

Opinion on Online Learning Classes in Higher Education

The media and communication students in this study found that online learning provided several benefits to both the students and lecturers. Students enjoy the online classes because it makes them more efficient in managing their daily tasks and schedule. This new norm has shaped them to be independent and disciplined, allowing them to enjoy self-paced learning. Besides, without having physical attendance, online classes encouraged some students who have low self-esteem to become more confident during the presentation and express their opinion behind the camera.

> *In my opinion, I do like online learning due to many reasons and one form several is such a way of teaching a student to be independent and discipline. With no one around us physically, we tend to schedule our tasks more efficiently rather than having a friend by our side to keep on reminding us of tasks to be done. – Nurul*

> *In my opinion, online class far better suits my situation even though at first, I was prepared for my things as I thought I am going to UITM. This is because online class allows me to be more confident during the presentation, asking questions and express my opinion rather than a physical class where I do not have self-assurance – Anis*

Apart from the elaboration provided, students have other reasons as to why they enjoy online classes, namely because it is cost-efficient, saves time and is environmentally friendly. For Husna, as a student, online learning minimized her financial expenditure in many ways, such as printing costs and buying hardcopy books. At the same time, this paperless effort had a positive impact on the environment. For Khairul, besides the reason above, attending the online class also saves student's time. He did not have to spend more time to get prepared for classes, particularly in terms of travel time to the class. Instead, he could use the time to study before the class, simultaneously without the worry of being late.

> *Other than giving benefits to the students and lecturer, the Earth also gets benefits which we can save more trees! It is a really good thing for me as a student because I can save up more money. We now have e-books, submitting everything through online platforms and the good thing is I do not have to spend money to print out the assignment! – Husna*

I like how I do not have to wake up early every morning just to get prepared to go to class. I think it did save me some time and I can use that time to brief the lecture before the class start. – Khairul

Problems Faced During Online Learning

a) Challenges of working with new virtual classmates. This theme focuses on the challenges experienced by students during online learning. From the analysis, three sub-themes emerged. Since this research focuses on the first-year degree students, it was found that many students stated that working with new classmates is a challenging experience. This situation faced was different from those who were in the second and third semesters, as the former have just entered university life virtually. They did not know each other, as they are from different demographic backgrounds. Thus, it is became difficult for them to work with each other as classmates, without having proper ice-breaking sessions like the conventional semester.

The biggest challenge among all is making new friends through online learning. I believe me and my classmates were strangers before and having the fact that we have to be working together is a little difficult due to the reason that we don't know each other. – Maria

We just entered the university but did not have a chance to get to know each other and suddenly during the first class, the lecturer just asks us to make a group for assignment. So, we had to randomly ask people to be in the group based on the first impression that we got seeing their faces during an online class. – Suhana

Besides, the students also stated that the lack of physical interaction forced them to feel uncomfortable with each other, particularly during a group discussion. The group discussion session can be difficult because they experienced awkwardness, since they were strangers with the others. Another reason is that some students fail to give full commitment as group members.

Another notable problem would be that it is very hard to be comfortable around classmates or even groupmates because we lack the experience of seeing each other face-to-face, the awkwardness is comparable to when talking to a stranger online. – Danial

The problem that I got from online classes is when we got groupmates that does not want to give cooperate in the group. Sometimes, when we want to do a group discussion we need to wait for that person, or even sometimes they cannot join the online classes so they might miss the lecture. – Azalia

b) Internet connection problem. The second problem faced by most students during online learning was internet connectivity. Previous studies have shown that many students faced internet connection problems during online classes. The participants in this study are also not exempted from this problem. Although this problem may be perceived as a common problem, it is important to see how it impacts student's emotions and motivation towards online learning.

Online classes can be draining and tiring as a student can't get the idea of what lecturers teach because of their internet disruption, environment or even the lecturers' connection. Due to this, some of them have to study by themselves, but does what they understand based on their studies is the same as what their lecturers taught them? - Adam

> *As someone who experienced and was affected by this implementation, I always had hard times with my Internet connection which at times could be annoying as I got kicked out all of a sudden from my online class on Google Meet because my Internet went down for a few minutes.- Farhan*

> *However, there are also times where the internet connection is not tolerating from the other side. The lecturer had to end the class early and postpone it to next week. – Alia*

From these findings, it was evident that it was not only the students who experienced internet connection problems during the class, but the lecturers who teach the subject were similarly affected. Thus, the former had to be prepared to expect the consequences that they might face such as unexpected interruptions to the online class. Consequently, they had to be ready to study the subject independently, in case they missed the class or if the class had to be postponed. These situations created a challenge for the students' learning outcome since they did not have a smooth learning experience nor full input about the course from the lecturer. As a result, students experienced mental exhaustion and tiredness due to the internet disruption.

c) Role of gender. Another interesting sub-theme that emerged from this study is the role of gender. From the analysis, it was found that many female students related their struggles with online learning in terms of their role as a daughter or a sister at home. For instance, female students confessed that they had to juggle the role of a student and a daughter. These students have to compromise their daily routine and duty at home by helping their parents with house chores. At the same time, they were also expected to attend and invest their time in the online classes.

> *I also face a problem with my surroundings, carrying responsibility as a daughter and a sister. As time passed, I tried to adapt to the situation, which is hard for me to accept. – Husna*

> *Online classes become more issue when you have to be a daughter and a student at the same time. We could not resist if our mom is calling us for help they need, right? This will make some of the students lose their focus and being left behind on their studies. – Amira*

> *The other problem is the chores. I have a feeling that the girls might relate to this a lot, as our chores are doubled. This is because online learning is done at home, so we need to get the assignments given by the lectures done as well as the house chores. Some parents might be understanding, but some are not. – Eva*

> *I have many responsibilities at home, such as cooking meals, cleaning up after them, doing housework, and so on. The environment at home is different from the class university. – Izzah*

This study found that the female students needed to adapt themselves at home as a student and as a daughter. Having these roles at the same time could be challenging since they needed to balance their responsibilities when studying online from home. It is challenging for them to focus during class or even to do the assignments, since they have to help their parents with the house chores. For Izzah, this situation will be different if she is living on the campus and for some students like Eva, Husna and Amira, this situation is unavoidable, since not all parents

understand what the students feel, such as losing their focus and completing the task given by the lecturers on time.

Feelings Towards Online Learning

The final theme that emerged was the discovery of the students' feelings towards online learning. After several weeks of online learning, the findings seemed to suggest that students relayed negative feelings such as being demotivated and sad.

a) Demotivated. Many students in this study considered online learning as a new experience. Thus, this required them to adjust themselves since they had no experience in online learning. At the same time, they needed to adapt to the new routine, friends, lecturers and the environment. The pandemic affected their mental and physical health.

> *Online classes have affected me personally because, during this time, I found myself get easily distracted and less focused. It was because I had no energy and motivation to study. After all, this is new for me. I felt lost without a routine schedule – Farhan*

> *No doubt, sometimes I feel stress and despair. Online learning makes me feel lost in learning, give up and so on probably because I couldn't communicate directly or face to face like before – Nurul*

> *The online class gave students mixed feelings. Personally, feeling easily demotivated is the main feeling I have as this pandemic affects me mentally and physically. – Adam*

The above findings indicate that students easily feel demotivated to study because they were not able to cope with the new ways of learning. They needed time to adapt to the new routine and the environment. Moreover, a lack of face-to-face communication with lecturers and classmates seemed to lead them to give up on online learning.

b) Sad. Besides feeling demotivated, these students also expressed their feelings of being unhappy as they were not able to attend the university physically. As first-year undergraduate students, they hoped to have a wonderful experience when entering university life.

> *I'm feeling a bit sad since I thought that I can finally feel like a university student after so long staying at home. It feels really different since usually we need to register our accommodation in college but we still at home and can't get to know our roommate and classmates. – Alia*

> *This is quite sad for us because we as a student wants to enjoy our study life in the campus and have a face-to-face lecture. We also want to go and have fun with our fun because university life, is the only time we have when we are studying together because once we enter our work life, it will definitely be different. There is no campus life for us. – Anis*

> *My feeling with this situation is not very happy because I cannot catch up more about what I learn. This is because most people need a friend for studies and when we were at home, we must study all alone. I just hope that next semester, I get to*

attend class physically. I don't wanna waste my degree's years by sitting in my room and not knowing my classmates and lecturers properly. – Suhana

Essentially many of these students feel sad for a range of reasons. Firstly, being freshies, they failed to have the opportunity to experience the physical registration and induction on campus. Secondly, they feel sad as they are unable to get to know their classmates face-to-face, hence, they missed the diverse activities and learning experiences of being physically on campus.

Discussion

This paper presents the reflections of online learning experiences of the first-year Media and Communication students during the COVID-19 pandemic. What makes this paper interesting is that it represents the voices of the first batch of first-year undergraduate students whose university adjustments and learning experiences have been affected due to COVID-19 pandemic. The focus of this group of students has received less attention from many scholars. Based on the findings above, it has been discovered that many reasons shaped these students experiences towards online learning. While many western countries have been practising online learning for the past few decades, Malaysia still has a long way to go. Other countries reported to have invested substantially in e-learning include the United States, the United Kingdom, Côte d'Ivoire, South Korea, China, and India (Dos Santos, 2019). To ensure that the learning process is not disrupted, open and distance learning or e-learning is implemented as an immediate solution.

In working out the opinion of these students on this issue, the findings of this study show that although most of the students stated that they were a bit upset about not being able to enter the university physically for their first year of study; they still enjoyed the benefits of the online classes. For some students, online learning is cost-effective, saves time and is environmentally friendly. It is cost-effective because they do not have to spend money to print their assignments or reports which have been a custom for many years. Students only needed to submit their tasks online according to the deadline and an online platform such as Google classroom as instructed by the lecturers. By having online classes and going completely to a paperless environment, the students and the university contributed to the sustainable development goals (SDG) 12 which is 'to ensure sustainable consumption and production patterns.' This is important as it supports that online learning can be associated with environmentally-friendly and sustainability (Md Harizan, Hilmi, & Atan, 2016; 2017; 2019).

Besides, the students in this study also stated that the online learning environment has encouraged them to be more disciplined and to work independently when completing their tasks and assignments with minimal supervision from the lecturers or instructors. Due to their flexibility, independence, and adaptation to ever-changing demands; it is expected that these talents from online learning would prepare them for the labour market, to be more creative in writing, and help them achieve good academic achievements (Nielsen, 2012; Mohammed Omer Alamin, 2018; Al & Liu, 2020).

Despite experiencing the benefits of online learning, the students also emphasized how the physical surroundings could affect their online learning adjustments. Learning from home can be a blessing for students who have a comfortable and supportive environment. However, it can also be a calamity for those may be experiencing other disadvantages. Our findings show that some students suffered from these conditions such as noisy environments, house renovation and no designated space for studying, all of which left them less focused during the

class. Loh Sau Cheong, an expert in Educational Psychology pointed out that a conducive environment is perceived as important for students for learning as it affects students' academic performance. In contrast, it may lead to negative behaviour, low motivation to learn and a lack of interest in learning (Lee Chonghui, 2020).

The second main theme in this study explores the challenges faced by students during online learning. It is of interest to know what the challenges are that they face to be a university freshie during this COVID-19 pandemic. Under this theme, the specific focus was on their experience as a first-year undergraduate student. From the reflection papers, students were found to confess the challenges they faced when working with new virtual classmates. It is believed that this finding is crucial considering the situation as a freshie in higher education.

The ice-breakers session in a traditional on-campus setting is helpful as it involves face-to-face interaction, breaks down social barriers and creates a beneficial environment (McGrath et al., 2014). Unfortunately, this situation was not the experience of the students in this study. The challenges faced by these students in this research were different compared to students in many other studies. It is because they did not undergo common ice breakers during induction or freshie week. These students had to start their friendships online which left them feeling awkward and uneasy toward one another. This new approach left them feeling uncomfortable working together as a group. Besides, it seems that the limited experience from the university and lecturers in handling the session may also affect these students' online learning adjustments.

Just like other research, the main findings of this study also pointed out that the internet connection problem affected these students' online learning experiences (Teoh, Lin & Belaja, 2014; Almusharraf, 2020; Al & Liu, 2020). In this study, students confessed that internet disruption left them emotionally exhausted, and the situation became worse when the lecturer who taught the class was facing the same problem. Finally, another interesting theme that appeared in this study was gender which was a challenging factor in online learning. From the content analysis, several female students found that their role at home was a distraction to their online learning adjustment. At home, these female students have to commit themselves as daughters by doing the household chores as expected by their family. At the same time, they also hoped that their parents, particularly mothers, may understand the former's role as a student may require them to complete their assignments and tasks given by the lecturers.

In the final theme of this study, understanding the feelings or emotions of the students, seemed to emerge. The findings demonstrated that students felt demotivated and sad having to be involved in online learning. This was mainly related to their current status as first-year students. For them, entering university was one of the important events in their life transition. Thus, there were many expectations when discussing going to the university. Many of them felt sad because this pandemic deprived them of their university memories such as excitement and fun experiences when meeting new friends, registering for the course and being in new accommodation.

Another reason that they felt demotivated towards online learning was that they lose the fun part of getting to know their classmates. They also needed time to adjust to the different ways of learning, as opposed to their traditional way of learning. Moreover, as first-year students, they also needed full support, supervision and guidance from lecturers and senior students, which could be difficult to do with the online learning environment. Thus, sudden transition

and adoption of the online learning adjustment has impacted students' negative emotions and motivation (Al-Kumaim et al., 2021).

Conclusion

To summarize, this paper argued that online learning provides complex experiences to the communication and media first-year undergraduate students' adjustment. They reflected that online learning fashioned them with positive characteristics such as independence, self-disciplined and sustainable behaviours. For some introverted students, the online learning environment was like a blessing in disguise, as it enabled them to ask questions during class, hence, it boosted their confidence in presentation. Meanwhile, the drawback of online learning experiences obtained from these reflection papers study is that, not all students are privileged with a good internet connection and a proper study environment at home. Besides, the female students in this research also faced a dilemma to perform their duties, between being obliging daughters and diligent students when they study from home.

It is hoped that the negative feelings and challenges experienced by these students in this study will help the university and educators to improvise the effectiveness of online learning and virtual friendship-making. This is crucial in order that students could feel more comfortable and excited to get to know their new classmates. Proper planning by the university requires a focus on students' educational achievement, while remaining flexible according to the crisis and situations (Bynander & Nohrstedt, 2020; Carver, 2020; Lemoine & Richardson, 2020). In this case, it was crucial for their learning adjustments and educational achievements since these students will work in the group throughout their undergraduate years. Universities should take this issue seriously since it is predicted that after the pandemic, learning may be disrupted for another six months to five years (Dennis, 2020).

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Teacher's Working Condition and Hybrid Teaching Environment – A Narrative Case Study

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Abstract

Since the onset of the COVID-19 pandemic, the entire system of education around the world is living each day under rapid experimentation to grapple with unforeseen challenges. The event of the COVID-19 pandemic has not only impacted a student's track of learning but also disrupted the everyday functioning of schools. In the case of the United States, since the beginning of March 2020, when schools were pushed into remote learning options, most teachers had minimal training and resources to teach online. Teachers faced technological challenges and suffered a severe lack of pedagogical knowledge to engage students in an online platform. The overnight switch of face-to-face to remote teaching has added to existing teacher workloads, including accommodating student learning and engagement on the virtual platform. The narrative study considers the experiences of Ally, a veteran teacher, who experienced doubts about her sense of confidence as a teacher with the overnight change of instructional formats. Qualitative analysis was conducted from two interviews, 12 written reflections, and observation notes. Following a review of relevant literature, we report the narrative account of this teacher's lived experiences. Next, we present suggestions and implications for research and practice while addressing the following research question: What were the lived experiences of a veteran teacher while pursuing a hybrid teaching instruction format, in both the traditional and online delivery format?

Keywords: Pandemic, hybrid teaching, narrative case study, teacher's working conditions

Since the onset of COVID-19 pandemic the entire system of education around the world is living each day under rapid experimentation in order to grapple with unforeseen challenges. The event of the COVID-19 pandemic has impacted not only a student's track of learning but also disrupted the everyday functioning of schools (Darling-Hammond & Hyler, 2020; Solórzano, 2020). In the case of the U.S. since the beginning of March 2020, when schools were pushed to remote learning options, most teachers had minimal training and resources to teach online. Teachers not only faced technological challenges but also suffered a severe lack of pedagogical knowledge to engage students in an online platform. The overnight switch from face-to-face to remote teaching has added to existing teacher workloads, including accommodating student learning and engagement on the virtual platform. Kraft et al. (2020) suggested, "this sudden and total change in how teachers delivered instruction, combined with the health threats and economic consequences of the pandemic, created a uniquely stressful and demanding context for teachers' work "(p.9). With teachers' having to deal with new set of challenges, the rate of teacher attrition continues to soar throughout the nation (Coffin & Meghjani, 2020; Kraft et al., 2020; Kuhfeld et al., 2020).

According to the Economic Policy Institute (2020), more K–12 public education jobs were lost this past April than during the Great Recession (Darling-Hammond & Hyler; 2020, Leachman 2019; Johnson et al., 2020). By the summer of 2020, several states faced massive budget cuts for schools resulting in colossal resignations and retirements adding to plethora of pre-existing challenges of the system itself (Bailey and Schurz 2020; Darling-Hammond & Hyler, 2020; Page 2020; Will 2020). The Center for Disease Control (CDC) and Prevention has recommended that even now when school buildings reopen, all staff wear masks, and classroom desks be spaced six feet apart, facing in the same direction—a far cry from the collaborative classrooms that are often seen in schools. Hands-on instruction is also discouraged with desks separated at an appropriate distance and all facing in one direction (Taylor, 2021).

In the past, researchers have shed some light on how pandemic has impacted (a) teacher preparation (Choate et al. 2021, Delamarter & Ewart, 2020; Slay et al., 2020); (b) academic achievement of students (Kuhfeld et al., 2020); (c) experiences of faculty and administrators (Hamilton et al., 2020; Hodges et al., 2020; Kim, 2020; Johnson et al., 2020; Rapanta et al., 2020); (d) teacher well-being (Allen et al. 2020) and last but not least teachers' experiences about remote teaching (Kraft et al. 2020; Marek et al. 2021; Reich et al., 2020). However, for this study, we examine and report the lived experiences of the working conditions of a practicing teacher during Fall 2020 when many schools adopted the hybrid teaching option. Undergoing change has continued to impact teachers' sense of success, student achievement and increased teacher attrition (Kuhfeld et al., 2020). The narrative presented here describes how Ally's (pseudonym) journey of being a veteran, passionate teacher raised doubts on her sense of confidence as a teacher with overnight change of instructional formats. The study enfolds varied challenges that highlight a myriad of issues such as adopting hybrid technology, student engagement and motivation, and self-efficacy. Following a review of relevant literature, we report the narrative account of a teacher's lived experiences. Next, we present suggestions and implications for research and practice, while addressing the following research question: What were the lived experiences of a veteran teacher while pursuing a hybrid teaching instruction format? The data was collected primarily by two one and a half hour semi-structured interviews: one in September when schools were beginning to experiment with hybrid teaching and one before the winter break of the same year. These interviews were mainly to capture Ally's experiences and her narrative of hybrid teaching? The interviews were guided by questions such as:

"What did a hybrid classroom look like?"
"What were your experiences and perceptions about hybrid teaching?"
"How prepared were you to adapt your curriculum for a hybrid platform?"
"What were the perceived struggles and challenges with hybrid teaching?"
"What was the perceived level of student engagement and motivation in a hybrid setting?"
"What was the perceived level of support from school administration?"
"How successful or stressful has your experience been around hybrid teaching?"
"How the prevailing work conditions affect your desire to teach in the future?"

Interviews were conducted utilizing a video conferencing tool and recorded on a local hard drive for further transcription and analysis. The other sources of data used were Ally's weekly written reflections that were used to record Ally's discussions with other teacher colleagues. The third data source was researcher's observation and field notes.

Literature Review

Despite rapidly changing educational policies, teachers in the United States continue to work in a structured and static schooling system. Often introducing a change in traditional classroom setting is a challenging task and calls for crossing numerous hurdles. Such a routine has forced teachers to continue to pursue the monotony of the daily tasks that ultimately focused on high stake testing. The onset of the COVID-19 pandemic seeks for upending traditional school approaches, forcing schools to adopt online instructions with minimal time and resources in hand. Schools having to grapple with numerous issues on top of the existing ones clearly showcased how unprepared public-school systems are to face the challenge that comes with the pandemic (Darling-Hammond & Hyler, 2020; Hodges et al., 2020). The upcoming review of literature is tied to relevance of school environment, leadership support, and a teacher's characteristics during the transition of mode of instructions and its impact on teacher's sense of success.

Leadership Support

Leadership roles are the most crucial factor that impact teachers' working conditions daily, especially in urban schools (Hamilton et al., 2020). During the time of crucial changes such as a natural disaster or such, extensive support from schools is seen as a crucial indication of teachers' motivation (Kraft et al. 2020). Bryk et al. (2010) reported that school leadership is critical during transitions to ensure the smooth functioning of the school. Inefficiency in a principal's role and responsibility in providing adequate support to teachers is a prime reason why the teachers opt out of their career (Darling-Hammond, 1997; Ingersoll, 2002). It is evident from the past research, that if a school principal continuously works to provide a healthy work environment, a teacher will stick to a school longer vis-à-vis when there is a lack of support from the top management (Boyd et al., 2011). Teachers expect to get extended support from school leaders and administration, especially during the beginning years of their profession to acclimate to the school environment.

A principal has expertise to offer a variety of solutions that can provide extended support to the teachers who lack the motivation to work in the profession. For instance, offering effective mentoring and induction programs can act as an essential support mechanism for beginning teachers (Darling- Hammond & Hyler, 2020). This strategy can be beneficial to the teachers at an urban school with concerns about working with English language learners (ELLs) and culturally and linguistically diverse student populations. A study conducted by Brown & Wynn

(2009) highlighted that principals should provide support mechanisms to the teachers and encourage teacher participation in the decision-making process on substantive issues to model leadership roles at large (Brown & Wynn, 2009). Similarly, Mizrav & Weber (2020) suggested, teacher's input is relevant for student outcomes, if school leaders are not making use of such collaboration, it can have long term effect on a teacher's practice. In other words, school leaders should provide teachers with an equal opportunity to participate in the decision-making process to voice their concerns and provide valuable feedback and suggestions (Brown & Wynn, 2009; Chetty et al., 2020; Ingersoll, 2002). Recently, Viano et al., (2020) through their study, suggested that consistent administration support acts as a crucial factor in a sustained teacher's career. Besides, from a policy perspective, a principal plays an essential role in reducing the factors that contribute to teacher attrition. Beginning teachers look upon principals as role models to provide direction and valid judgments while making critical classroom decisions. Thus, when teachers feel supported from principals, teachers tend to have greater involvement in everyday activities. Such role models contribute to lower teacher migration and teacher attrition of those schools.

Additionally, during the pandemic, teachers and other school staff have reported about inadequate coping strategies to pursue persistent instruction in a remote setting (Hamilton et al., 2020; Kraft et al., 2020). Under the given circumstances, teachers, both new and existing, count on extensive support from the top management regarding resources being made available for them to offer the best support to their students.

School Environment

A school environment comprises aspects such as working conditions, staff relations, student behaviors, school facilities, job salary, safety issues, and so forth, that can contribute to teachers leaving or continuing to stay in that school. Of these, relations with administrators, students, and other teachers play an essential role in a teacher's everyday work (Ingersoll, 2001; Darling Hammond, 1997). Cordial relations among staff and teachers can contribute to a healthy work environment or lead to teachers leaving their profession. In their study, Johnson, Kraft and Papay (2012), analyzed the data from Massachusetts Teaching, Learning, and Leading (MassTeLLs) and concluded that a teacher's satisfaction and academic achievement is related to a school's working environment. Teachers should be prepared for collaborative work not just with their mentors but also with other teachers that help reduce workload stress. Additionally, teachers tend to share and learn from each other massively, helping them draw connections within different content areas (Smethem, 2007; Sass, Seal, and Martin, 2011).

With the pandemic being in effect, the collective school environment across the nation has experienced disconnection and mental stressors. In no time, the school environment transferred into collective chaos with schools looking for solutions to insurmountable problems. Taylor (2021) suggested that the nation's 13,000 districts have largely come up with their own standards without little support from the federal government. At the same time, school authorities are worried about lack of teacher preparedness for the virtual environment and equally for their students' ability to understand and access virtual learning tools. Kraft et al. (2020) reported that essentially a teacher's working conditions impact their sense of success with students.

Teacher Characteristics

Teacher characteristics that relate to sustain to continued service in the profession encompass several components such as teacher efficacy, teacher motivation, and teacher working experience. Ingersoll (2001) argued that teachers of either younger age or older age happen to

leave the profession due to several reasons, for instance, childcare needs, higher stress levels, job dissatisfaction, health concerns, and early retirements resulting in a U-shaped depression of age as a characteristic (Ingersoll, 2001; Olsen & Anderson, 2007). Similarly, teacher experience in a classroom speaks about his/her willingness to continue in the profession. The teacher attrition rate is higher during the first five years in the profession. Novice teachers are expected to leave the profession within the first three years due to job dissatisfaction, classroom environment, and student behavior, whereas teachers who stick to the profession for at least five years or more successfully learn to overcome these challenges due to the experience gained over the years (Cochran-Smith, 2004; Smethen, 2007).

On the other hand, teacher efficacy can be understood as a teacher's self-belief and self-awareness to impact student engagement and positively affect students' achievement. Bandura's (1986), self-efficacy construct explains that individuals approach situations where they feel competent to manage the situation successfully while avoiding situations where they lack preparedness. A teacher's self-efficacy can be referred to as an internal construct that affects a teacher's motivation while working as a part of the education community Teacher efficacies are believed to play a vital role in teacher behavior and student outcomes. For instance, teachers with higher self-efficacy will adopt positive behaviors to promote student engagement and a well-planned classroom management technique. Simultaneously teachers having low self-efficacy will lack the motivation to produce positive student outcomes. Additionally, they also tend to have more grievances and greater job dissatisfaction (Ingersoll, 2002; Perrachione et al., 2008; Mertler, 2016). In their review of literature, Tschannen-Moran et al., (1998), reported a strong relation between a teacher's self-efficacy and student achievement, and hence teachers are more resilient when posed with greater challenges.

These unprecedented times have even made experienced teachers question their ability to create a work-life balance. Teachers' ability to motivate and build student confidence has made them worried about their emotional and social well-being (Allen et al. 2020). Regardless of teacher's characteristics and teacher's work experiences, they have pondered questions such as Will we ever get to see the same students in person? How will hybrid learning affect their academic growth? What will the dropout rate look like? What about student engagement? More than anything, teachers have described remote learning as exhausting and mentally stressful for students, parents, guardians, and themselves. Teachers are not only experiences uncertainties in terms of curriculum planning but the economic fallout has result in a wave of layoffs for teachers, staff, teachers' aides, and instructional coaches (Mizrav & Weber, 2020) Similarly, Education Week survey data has shown that teacher morale has continued to decline over the past couple of months (Data: Students Are Getting Less Instruction Time During Coronavirus, 2020).

Teacher's Experiences and "Emergency Remote Teaching"

With widespread of Covid-19 in the U.S., the schools adopted to the mode of remote teaching with no preparation time. Hodges et al. (2020) stated that there was a clear difference between online teaching where courses are prepared well in advance by faculty who have expertise adapting teaching online versus "emergency remote teaching" in the case of many public schools and the pandemic. It called for most teachers to now adapt to a teaching strategy with a lack of curriculum materials and pedagogical training. In their nationwide study, Kraft et al. (2020), reported that work life balance was a concern for 51% of mid-career, while 39% of early-career teachers and 35% late-career teachers reported similar concerns. Veteran teachers reported a severe lack of preparedness to handling technology-based tools. "Teachers struggled to find a balance between their professional and personal responsibilities. They scrambled to

master new technology. And …. remained disengaged in remote learning – due, in part, to their continued lack of access to technology" (Kraft et al., 2020, p.28). Educators for Excellence (2020) reported that only 51% of their students participated on remote instruction impacting their sense of success and motivation. In other words, in their findings they recorded a large drop in teachers' sense of success, and they face enormous challenges during this time (Johnson et.al. 2020; Mareck et al., 2021).

However, with transitioning from "emergency remote teaching" (Hodges et al., 2020) to schools offering hybrid instruction with beginning of Fall 2020, little research is conducted on yet another challenge of teachers having to adapt to a new instructional format. We build on from the existing literature of teacher's working conditions to capture the lived experiences of a practicing teacher under a hybrid instruction format to explore on the effect on teacher's working conditions (Kraft et al., 2020).

Method

Research Design and Data Collection

A narrative inquiry under the umbrella of qualitative research design was used to gather data for this study. Narrative inquiry is a recommended tool that allows researchers to record lived experiences. Connelly & Clandinin (1995) suggested that teacher narratives allow researchers to examine their lived experiences. Utilising this method, synchronous Zoom interviews were recorded with Ally (pseudonym). The first interview focused to understand her everyday teaching experiences in a hybrid format. Ally shared her stories about how her workdays look different from previous years while the second interview was to gain additional data and support inquiry that was developed during data analysis. The second interview also captured her experiences of now being in a hybrid setting over the period of four months. The second source of data was Ally's written reflection about her experiences about her previous week at work. The purpose of this data was capture Ally's experiences in the story format, that could inform her experiences over the coming weeks. Data was also supplemented through field notes, and observation notes. (Crozier et al., 1994; Rushton, 2001).

Participant

Ally is a high school English teacher with ten years of teaching experience within the same district. She is also a full-time doctoral student in Curriculum and Instruction at a University in Southern Texas. At the time the pandemic occurred, she was in her third year in the PhD program. The interviews took place at the start of her fourth year in the program and eleventh year teaching public school. Ally was selected as a sample for this research study because of her unique position as a full-time teacher and full-time PhD student. The intersectionality of these two identities allowed Ally to provide a unique story to add to the depth of research presented in this study.

For this study, the hybrid teaching approach that Ally references was one where she was asked to teach face-to-face and via Zoom each class period every day. She was teaching from her computer each day to ensure that students online could hear and receive quality instruction as well.

Data Analysis

Data sources were analyzed using a comparative process. Each interview was transcribed and then coded. Patterns were noted, and common themes were identified and highlighted based on frequency and level of importance. Themes from the observation notes served to

substantiate the found themes and coding patterns in the interview transcription analysis. Data sets were reviewed inductively, simultaneously, and repeatedly during the data collection phase to analyze essential connections among factors of influence among the core categories. The prominent themes emerging from the combined data analysis of interviews and observation notes are sectioned into virtual learning, engagement, achievement, and support.

Findings and Discussion

The interviews combined with other data sources reflected that Ally faced a myriad of challenges regularly. Ally experienced additional pressure from both schools and parents, especially when monitoring the growth and learning of individual students in the parallel environment. Her workload has increased manifolds as she must adapt her instruction for a hybrid platform, ensuring that no student falls behind. Additionally, such working conditions had adverse effects on her mental and physical well-being. Regardless of a supportive school environment, Ally stated that there has been no real change to a teacher's work expectations. The data consistently highlighted the challenges faced by the teachers and is categorized into the following themes: virtual learning, engagement, achievement, and empathy and support.

Virtual Learning Environment

Both interviews and observation notes consistently reflected Ally's experience with students in an online platform. Thus, the data was analyzed to underscore her experiences that occurred during the transition from emergency remote instruction to a hybrid teaching format. During her interview Ally mentioned:

> The training and professional development provided for teacher roles were hurried, rushed, and focused exclusively on technical aspects of teaching online. Few resources were shared to help in the classroom and when we were provided with materials, they were often vague and unclear, so we were left with our own interpretation. Most of the time, this meant not implementing t hem in the classroom at all as we had so many other things on our plates. (Interviewee Response, Session 1, September 2020)

Ally discussed the shortcomings of limited teacher and administration training before the beginning of the classes for teachers, especially in the K-12 school setting. In her weekly written reflection, she mentioned, "the teacher training topics included platforms for developing asynchronous lesson plans and what those tools would look like. Increased number of webinars were promptly made available to the teachers on the internet within teacher realms during the semester. However, the implementation of planned resources for teachers was a concern, including delayed availability of tools to develop effective online lesson plans and instructions".

The interview data and reflections made it evident that online learning can be a concern for the teachers and parents while addressing the needs of K-12 students. As a part of the hybrid learning environment, related sub-themes emerged from the data sources categorized as: lack of training and experience, and lack of teacher autonomy. These sub-themes also impact the broader themes of engagement and achievement, which will be discussed in their subsequent sections.

Lack of training and experience regarding an online platform. Teachers in K-12 school systems have had limited exposure to navigating online tools to develop effective lesson plans

and curriculum that scaffolds student learning and success through the online platform (Solórzano, 2020). With the onset of the pandemic, the school systems across the country started intensive planning to maneuver several challenges for the smooth functioning of the school system and how it will look like for the parents, students, teachers, and administration. While no one had the right answer and school leaders were still weighing in on the best options, teacher preparation and development took a sideline (Darling-Hammond & Hyler, 2020). During her interview, Ally mentioned:

> As the school year started, we learned that we would have limited or no teacher subs available. This has severely impacted our class planning time. We also could not take any days off because there were no subs available to cover our class. Each day we had more questions than answers, and the tension quickly came to head. Frustration with administration was the first sign, and although my campus has a great administration; their hands were tied by the district. They, too, could only do so much. Many of my colleagues have planned to leave their jobs just because they feel unprepared for the new challenges. I was really shocked to see that my long-time mentor decided to quit her job because she was not able to take any more stress related to the new nature of work. She had planned to retire in the next year or so, but this made her decision easier to retire early. Such a scenario has challenged me to think if I would want to stay in the classroom for a long time: at first, I always thought I'd be okay staying in the classroom after earning my PhD while looking for a full-time job in higher education; however, I'm actively looking for jobs for next school year. I can't do another year of this. (Interviewee Response, Session 2, December 2020)

Several districts offered limited teacher training before the beginning of the school year which left a profound impact on not only their curriculum and instruction planning but switching gears to full-fledged online instruction left several students confused with no motivation to pursue their classes online at a full-time mode. During her encounter with her students during online teaching, one of Ally's students mentioned, "I am not sure how to upload this picture from my computer, can you please help me." Confusing and chaotic situations were now more common to occur while teachers deliver content due to the hybrid class format. Such situations create panic for teachers and students, primarily when they depend on their teachers the most.

Lack of teacher's autonomy. While online learning technology may provide essential resources for teachers to build and execute lesson plans to cover relevant curriculum, they only offer a limited teacher autonomy. For instance, helping students in a real-time scenario can be a concern for teachers to keep students engaged and motivated (Solórzano, 2020). Additionally, other factors such as limited internet services and other forms of technology available to the students are beyond the teacher's control (Kuhfled, 2020). Ally noted that "many teachers are willing to take district scripted lessons this year when they would have never done so before. There's too much on our plates to be creative and engaging with our lessons this year." (Written reflection)

Engagement

Student engagement is another pressing concern that is consistently mentioned throughout Ally's interviews. The curriculum and instruction offered in the public-school system in the United States have constantly pitched hands-on exposure and peer collaboration as a key for student success (Kim 2020; Hodges et al., 2020). However, an online platform limits teacher to engage in more in-depth conversations with their students and offer limited peer

collaboration (Choate et al., 2020). Ally expressed concern for school districts and teacher preparation programs to provide extensive information about addressing student engagement when teaching online. Even though a pandemic situation is known to have a temporary existence, it has caused extensive harm to the students, especially to those who belong to urban school districts. It has raised questions for a more extensive education community to address, such as in what ways can education continue to address societal inequities? Is it ethical and realistic to only hold teachers accountable for student success, especially when everyone is hit equally hard by the pandemic? (Chetty et al., 2020; Darling-Hammond & Hyler,2020; Kraft et al., 2020)

Lack of training and experience. With the beginning of a new normal, teachers were challenged to adapt their courses for online platforms as well as for face-to-face instruction. Nevertheless, teachers were not provided with extensive training and support to address the concern of student engagement. Ally mentioned:

> Our district offered us limited training right before the school year began. These pieces of training were superficial that left teachers to figure out several things for themselves. Also, I had several concerns while preparing our work for online students that no one had answers to. I had no person to look up to for support and guidance because no one had done this before, no one had the answers. This left me struggling each day with students. I pride myself on being a great teacher with effective and engaging lessons; however, I felt like a new teacher all over again. It's hard to feel good about what you do day to day when you know you can't give your best. This also greatly impacted my social-emotional well-being because I love teaching, but now with each day of struggle I know that I can't continue to do this next year. (Interview Response, December 2020).

When asked about the potential effects that this could have on teacher retention, Ally agreed that trying to teach disengaged students is a large source of teacher frustration, potentially leading to teachers choosing to pursue other professional opportunities in the immediate future (Hamilton et al., 2020). Ally's role as PhD student allowed her to empathize with the role of students as well. She knew what it was like to be on the other end of virtual learning as a student. Her observation notes included "It's clear that being successful as an online student isn't for everyone. I know I can do it as a grad student because I'm 33 and self-motivated. I can't expect the same level of effort from 14-year-olds who don't have a say in the matter." (Observation Notes, 10-05-2020)

Lack of teacher's autonomy. A teacher only has limited control over engaging her students in a virtual platform while covering the course content. Online resources can be limited to watching videos, manipulating simulations, interactive read aloud or sharing steps with students to execute some hands-on projects. However, a teacher's contribution to enhancing the degree of student motivation and engagement may not come out as planned.

> It is hard to remind students to keep their camera on while you are trying to teach them. Even after repetitive warning some students do not turn on their cameras: they either blame it on the technology or they probably aren't even at their computers. I can only do so much. I can't reach through the screen and tap on their desk and monitor their level of focus as would when they are sitting in my classroom. It's the most discouraging feeling I've ever experienced as a teacher. (Observation Notes, 11-02-2020).

Achievement

The most significant advantage that Ally shared about virtual and hybrid learning was increasing student achievement when implemented in an organized fashion with students who were engaged regularly. Ally mentioned the ability to differentiate instruction and build in student choice was a key to helping students be successful during this time. "I think this could allow for great differentiation and a way to increase student engagement." The ability to differentiate instruction was something that, when given students who are willing to learn, teachers could use to leverage the higher order thinking skills that they are hoping to implement with their students. Ally indicated:

> Self-motivation is a key for students, especially high school students. Some of my students who are in the online environment and engaged are the ones who keep me going. Students need to be disciplined to pursue their work, and that's a real struggle for 9th graders. My students who are not passing are exclusively online students. I have seen a constant decrease in my student's level of participation just because I am trying to teach students in both environments at the same time, which becomes disengaging for students in either platform. There is also considerable lack of submission of assignments from my students who are attending classes virtually. As a teacher I understand that it is a very different experience for my students and they are still in the learning process, I always keep reminding them that I am here to support them, but honestly, I am concerned about their learning as well as their well-being. (Interviewee Response, December 2020)

In the given situation, student achievement had become a cause of concern primarily because accessing schoolwork through an online platform requires strict discipline from a student's end (Darling-Hammond, 2020; Kuhfeld, 2020).

"Lower-income kids, kids of color, kids with unique needs like those who have a disability or other challenges – the numbers look very, very bad," said Robin Lake, the director of the Center on Reinventing Public Education, a research and policy organization based at the University of Washington Bothell (as mentioned in 13,000 school districts, 13,000 Approaches to Teaching During Covid by Taylor, K).

Lack of training and experience. Regardless of their teaching experience, most teachers are finding it challenging to enhance student achievement on an online platform. Taylor (2021) reported that in Houston, 42 percent of students received at least one F in the first grading period in the fall, as compared to that 26 percent in the previous fall. Ally shared, "that limited teacher training on the use of online technology for adapting curriculum for virtual environments had made their work challenging, and ultimately this affected students as well. When there are technical issues, they are much more likely to check out of learning entirely." (Written reflection)

Lack of teachers' autonomy. With limited control to engage and motivate students online, teachers are already experiencing the impact of limitation of virtual environment on student achievement (Kuhfeld, 2020). Ally shared that many of her students who are struggling with getting passing grades are online, and it is not possible to order these students to come back to school even if it's in their best interest. Ally stated:

> Often, as teachers, we are not aware what kind of guidance students need while attempting their assignments at their own pace and cannot seek for clarifications simultaneously as they are working at home. This just creates an unwanted gap in their learning and understanding. My online students either end up figuring out the work themselves or with the help of a parent or guardian as I had a sense that they were disengaged while classes were in session. To be honest, most of the time they just didn't do it at all. What can I do about that? (Interview Response, December 2020).

Empathy and Support

Lack of teachers' experiences and autonomy calls for empathy and support by the school leaders. While district superintendents and school principals are making constant efforts to keep a safe and healthy school environment both for teachers and students, they can only support teachers in a limited way when it comes to actual class planning and execution (Kraft et al., 2020). Ally mentioned:

> Teachers like me are unable to take off days to cope with the monotony of every documentation and paperwork on top of teaching in a hybrid platform that already requires in-depth planning. I can see that the effect of pandemic is here to stay as I feel a high level of resentment towards my district and those in charge. School leaders should support teachers in improving the quality of the hybrid instructions rather than holding them accountable for increased level of work and catering exclusively to parent demands. (Interview Response, December 2020)

In the given scenario, one of the best strategies is to equip teachers by providing them tools for continued student learning and engagement instead of deviating them with meticulous paperwork and report submissions. In her written reflection Ally wrote, "several students who belong to low-income family groups already lack resources and, in such situations, schools should prioritize the learning gap by making equal efforts to provide learning resources to their students by contacting families to inquire about the support they are seeking at this time." Also, at the same time, teacher education programs should continue to offer extended support to the pre-service and in-service teachers to share online resources that can improve their quality of teaching, keeping in mind that schools need to address varied learning styles (Written Reflection, October 2020). Ally mentioned that she didn't feel like the PhD program was helping her to prepare to return to a world of teaching online. "My classes haven't changed much. Professors have altered their instruction but have made no mention of how I should change what I'm doing in the classroom." (Written reflection)

Discussion

Ally's narrative allows us to understand her lived experience as a practicing teacher who has been in classroom for several years as well as her role and experience as PhD student. She described how her each workday looked under a new setting. Even though she struggled each day, she made it a point to talk to her friends and colleagues. She promised herself to be resilient and be there for her students each day, despite having the thoughts of quitting her work. Her experiences are powerful and did highlight that teaching under sudden change of mode can be extremely challenging especially when we already have existing loads of issues. Based on our current state of education, there is an urgent need for teacher education programs to address the issues that surfaced with sudden hit of pandemic. University faculty, educators, and school personnel should offer coursework or professional development that should provide

technological and pedagogical training for our teacher to operate under an alternative teaching environment such as hybrid or virtual learning. Creating a rigorous and engaging online learning space can be mainly challenging if the teacher preparation programs do not offer relevant and coursework for preparing teachers to engage students in virtual environments that also attends to the different needs of learners.

While teachers are essentially preparing lessons for different platforms, the time allotted during a 45-minute planning period is not enough for the teachers to accomplish the necessary tasks to teach multiple formats successfully. Allowing teachers extra time, either through additional planning time, or designated asynchronous learning days for all the students call allow teachers to feel a small reprieve from the constant pressure of completing two jobs in the time that has been allotted for completing one. Administrators and district support staff should be prepared and trained to handle the specific teacher issues and concerns that have arisen due the nature of teaching during a global pandemic (Will, 2020).

Additionally, ensuring that teacher concerns are taken seriously and addressed is crucial. When tensions and anxiety levels are high for students, parents, and teachers alike, teachers must feel a sense of support from their administration. Allen et al. (2020) reported, "head teachers experienced particularly large increases in anxiety and reported that they were more likely to leave the profession because of the experience. Head teachers showed particularly pronounced increases in anxiety" (p.4). When teachers are forced to reckon with parental concerns or students refusing to follow safety protocols, administrative teams and individuals should be willing and prepared to provide teachers with the support to ensure these protocols are following and that teacher decisions are supported in parent conferences or phone calls. While we all may have varied perspective and approaches to deal with the present situation, it is recommended that teacher education programs, schools, and stakeholders at large should come together to ensure that teachers across the platform are thoroughly trained and educated to maximize student learning and engagement (Solórzano, 2020).

Future research may be carried out to explore the impact of hybrid teaching on a teacher's sense of success and well-being that may incorporates inputs from several teachers. The questions that arise from this study are, "What were student's experiences with hybrid platform especially when we are living in uncertain time?"; "How well prepared are the school districts to offer hybrid learning options to address the health and safety of students and staff?"; "What are parents' perceptions about continuing to hybrid learning options, especially when the health and safety of their children is of paramount importance?". Improving teacher confidence and quality is the key to providing our students with the best education especially in these desperate time (Reich et al., 2020; Tucker & Stronge, 2005). Ally's story was just one account that suggests us that even though pandemic has forced us out of our comfort zone, and many have adapted well, the damage it has done will keep surfacing for several years to come.

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Critical Perspective Analysis of Higher Education Studies in the Online Mode – Emerging Challenges and Solutions

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Abstract

Many academic institutions that had previously hesitated to modify their old pedagogical method had to opt for completely online modules due to the COVID-19 global pandemic. This paper provides insight into the perception of students of higher education concerning the online mode of learning. Data was collected from 310 students pursuing different courses. A questionnaire, divided into 7 sections was administered including: general information of students, time management, understanding of course content, view of students on assignments and submissions, ease and comfort of study, skill development and motivation, and course satisfaction. The data was analyzed quantitative analysis. Results showed that 72.4% of students do not prefer the online platform for learning and this view is contributed by parameters like net connectivity, time, overall development of the candidate and evaluation of the course outcomes. Various parameters such as internet connectivity, parallel data users, unwanted anxiety, extra time, comfort, understanding of the concepts, interaction, information absorption and retainment, course evaluation and assignments, expense comparison, skill development, lecture participation and extracurricular growth were mentioned. It is suggested that an alternative to classroom learning must be used to maintain one's academic progress.

Keywords: academic crisis, higher education, Online learning, SARS-Cov-2, student's perception

On 11 March 2020, the World Health Organization (WHO) declared a Global Pandemic (COVID-19) (Cucinotta & Vanelli, 2020). As a result, various lockdowns were introduced in India after 22nd March 2019 (Soni, 2021). As a result, education institutions were forced to remain closed until the situation was normalized. Therefore, it is no longer a question of whether online education can deliver excellent university learning and if universities can rapidly and efficiently include online study. Education in India is estimated to run into billions of dollars, there are overall 39,913 colleges and 993 universities in India respectively in FY19, having 37.4 million students enrolled in higher education (*Education & Training Sector in India: Education System, Growth & Market Size | IBEF*, n.d.). Hence, students are one of the most valuable resources of India, and their education cannot be stopped because of the COVID-19 pandemic. In contrast, overseas institutions like the Massachusetts Technology Institute (MIT), Harvard University and Yale University Students Free Yale Open Classes prefer a range of different platforms for online courses, including edX.org. According to the Indian Private Equity and Venture Capital Association (IVCA) and PGA laboratory, Indian start-ups have made a total investment of $2.22 billion in 2020 compared to $553 million in 2019 (*Indian Edtech Startups See Investment of $2.22 Bn in 2020, Shows Data | Business Standard News*, n.d.). These online platforms have now become the new normal for most. Also, India is one of the 8 countries leading in online providing education via online platforms (*8 Countries Leading the Way in Online Education - ICEF Monitor - Market Intelligence for International Student Recruitment*, n.d.). The online learning method has its challenges and strengths, but they keep education going.

Literature Review

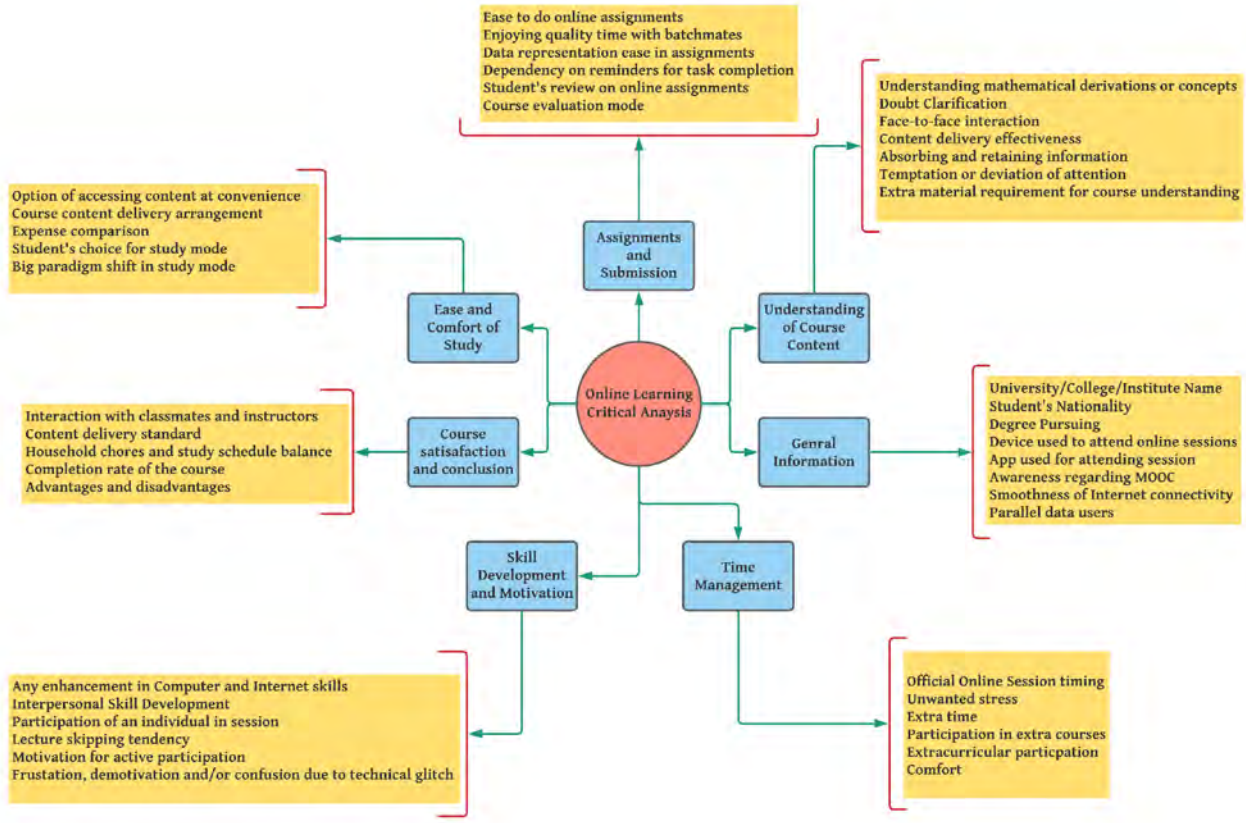
The Government of India also undertook other efforts, such as the National Open Educational Resources Department (NROER), which exposes students to e-libraries, e-books, electronic courses and statistical other online events. In addition, the Department of Human Resources Development offers a DIKSHA portal, and an e-Pathshala website for students to access numerous study resources online. The SWAYAM Portal, a Government of India project coordinated with AICTE, NCERT, IGNOU, UGC, NPTEL, NIOS, IIMB, NITTR and CEC, delivers latest and high-quality content (*Government Facilitates E-Learning Platforms for Students amid COVID-19 Outbreak | Digital Learning Platforms*, n.d.). This allows students several preferences such as asynchronous and synchronous learning techniques (Malik et al., 2017). The analyses of data of 45 students from three schools in Shah Alam, Selangor demonstrate that e-learning provides more flexibility to teacher-led and student-self-study courses (Luaran et al., 2014). Experimental design has been performed to research the success of 10th-grade physics students in online and face-to-face (F2F) education. The study shows that the success of students who have been taught F2F has been considered poor because the learning process is confined to co-operation and resource sharing in classrooms, but online education allows better interaction (Baig, 2011). Furthermore, research in higher educational institutions illustrates how the methods of measurement and implementation used will affect online curriculum performance and the advantages and constraints faced through e-learning (Xu, 2007). Also, research including 127 students enrolled in the Bilgi University eMBA Master's degree, examined interactions between personality and academic accomplishments of learners in a web-based world and web-based education attitudes with positive findings revealing that behavioural characteristics reflect roughly 53.2% of academic achievement and 52.7% of web-based education attitudes (Bayram et al., 2008). The study revealed that the results of online courses have increased positively for students who engaged in interactive learning methods, and was structured to promote the development of the learner population. (Benbunan-Fich & Hiltz, 2003). Another study established four broad e-learning categories: (1) the supply and delivery through electronic means of an educational, training and education

curriculum; (2) communication-oriented - interactive resource and content learning requiring interaction through online contact with the learner and the teacher; (3) technologically-based - technical use of training and learning services technology; and (4) pedagogical - information and communication technologies to assist students in developing their education (Albert Sangra et al., 2012). Conversely, a study conducted on exploring how students enrolled in a professional writing class in two web-based portions are rated relative to students enrolled in a traditional class edition showed no substantial difference in student success (Mehlenbacher et al., 2000).

Methodology

Primary data was collected from 310 students with experience of online learning. A survey was designed and divided into various sections. Section A comprised 8 questions with general student knowledge, Section B comprised 6 time management questions, Section C contained 6 questions to understand the substance of the course, Section D contained 6 tasks based and submission questions; Section E comprised 5 study-oriented questions; Section F comprised 6 skill growth and motivation-oriented questions, and Section G contained 5 questions based on the satisfaction and conclusion of the course. The questionnaire was circulated via Google forms and the responses were later analyzed. The period of analysis and questionnaire formation was March 2021. The respondents were given information regarding the purpose of the survey while collecting the data. Data mining is a new way of analyzing data, especially for very large datasets. Data mining can also be done with the help of Microsoft Excel (Hewen, 2008). Various aspects of statistics such as the measure of spread and measure of central tendency were analyzed using Microsoft Excel (Divisi et al., 2017). Static indices applied to the first four moments of the distribution summarize the most critical frequency distribution features such as *mean*; *variance*; *skewness*; and *Kurtosis* which is sometimes used incorrectly to represent "peakedness," which actually reflects deviations from the standard curve (Hopkins & Weeks, 1990). The mean is given as a central trend measure and the variance or standard deviation as a variability measure in traditional study reporting. Hence, such quantitative statistical analysis has been provided, apart from data representation as well as data analysis and interpretation into the results section.

Figure 1
Different Aspects of Online Learning and its Critical Evaluation



Results and Discussion

Section A: General Information

Question 1: Please enter our University/College/Institute name.

Table 1

Details of the Number of Respondents from each University/College/Institute

University	Respondent	Percentage
Anand Agricultural University	238	67.81
Gujarat Technological University	52	14.81
Universiti Malaysia Perlis	6	1.71
Georgian College	5	1.42
Chittagong University	4	1.14
Pandit Deendayal Energy University	4	1.14
Erbil Polytechnic University	3	0.85
Ludwig Maximilian University	3	0.85
Gujarat University	2	0.57
University of Amsterdam	2	0.57
SRM University	2	0.57
Birla Vishvakarma Mahavidyalaya	2	0.57
Visvesvaraya Technological University	2	0.57
Maharaja Sayajirao University (MSU)	2	0.57
Kadi Sarva Vishwavidyalaya	1	0.28
Ternopil National Medical University	1	0.28
Vellore Institute of Technology	1	0.28
University of Tehran	1	0.28
Tribhuwan University	1	0.28
Charotar University of Science and Technology	1	0.28
Dharmsinh Desai University	1	0.28
Ahmedabad University	1	0.28
University of Copenhagen	1	0.28
Banda University of Agriculture and Technology	1	0.28
Sam Higginbottom University of Agriculture, Technology and Sciences	1	0.28
Uttar Banga Krishi Vishwavidyalaya	1	0.28
University of York	1	0.28
University of Derby	1	0.28
University of Business and Economics	1	0.28
Rajasthan University	1	0.28
Kishinchand Chellaram College	1	0.28
American International University	1	0.28
National Institutes of Technology, Rourkela	1	0.28
Shahjalal University of Science & Technology	1	0.28
International Islamic University Chittagong	1	0.28
Marwadi University	1	0.28
Catholic University of the Sacred Heart	1	0.28
University of California	1	0.28
Total	351	100.00

Question 2: Please select your country, dependency, or territory.

Table 2
Details of Respondent's Nationality

Country	Respondents	Percentage
India	310	88.32
Bangladesh	11	3.13
Malaysia	6	1.71
Canada	3	0.85
Iraq	3	0.85
Germany	3	0.85
Netherlands	2	0.57
Bhutan	2	0.57
Nepal	2	0.57
United Kingdom	2	0.57
Denmark	1	0.28
Iran	1	0.28
Italy	1	0.28
Philippines	1	0.28
Slovakia	1	0.28
Ukraine	1	0.28
Afghanistan	1	0.28
Total	351	100

As per the survey, 88.32% of students were Indians and the rest 11.68% were international students as shown in table 2.

Question 3: Please share which degree are you pursuing at present?

Table 3
Details of Degree/Course Pursued by the Respondent

Education	Respondents	Percentage
Degree Engineering	190	54.13
Bachelor of Science	101	28.77
Diploma Engineering	22	6.27
Arts	12	3.42
Masters of Science	10	2.85
Commerce	7	1.99
PhD	4	1.14
Medical	3	0.85
Master of Arts	2	0.57
Total	351	100

Question 4: How do you attend the online sessions?

The study also highlights the way students engage in these online learning processes, which play a significant role in the experiences. A total of 74.9% of students accessed classes from the smartphone, 21.4% of students attended it from the laptop, 2.8% from tablet and only 0.9% of students accessed it from laptops. Mobile usage can increase distractions that can be avoided using tablets otherwise.

Question 5: Which app is used by your Institute to deliver contents/online sessions?

Table 4
Details of the App Used to Access the Content

App	Respondents	Percentage
Google Meet	276	78.63
Microsoft Teams	46	13.11
Zoom	20	5.70
Cisco Web-Ex	4	1.14
Impartus	2	0.57
Sky Room	1	0.28
Blackboard Collaborate	1	0.28
Depends on the teacher	1	0.28
Total	351	100.00

As per the survey, as shown in table 4, the most used platform for online learning is Google Meet followed by MS Teams, Zoom, Cisco WebX and other mediums. Google Meet, a free platform is the choice of many. whereas Zoom, also being a free platform, was prey to privacy invasion and other controversial matters, hence being avoided by many. MS Teams on the other hand was closely followed by Google Meets for a secure experience.

Question 6: Are you aware of online platforms that already existed before this situation, like Coursera, edX, Udemy, Swayam, and so forth?

While the COVID-19 pandemic has been the key driver for the increase of online learning, it is crucial to analyze if online curriculum platforms existed before the pandemic, and/or how COVID-19 has affected its popularity. An analysis of the survey results reveal that 42.2% of students were not aware of these online educational programs before the pandemic, 33.9% of them were aware but they never enrolled in the courses provided, 17.7% were aware and have actively participated in the online learning programs and 6.3% are gaining awareness and developing interest to join the online learning courses. Hence, the rise in various online learning platforms during the pandemic is evident.

Question 7: Do you feel you are having a smooth internet connection always?

Figure 2
Internet Connection Graph

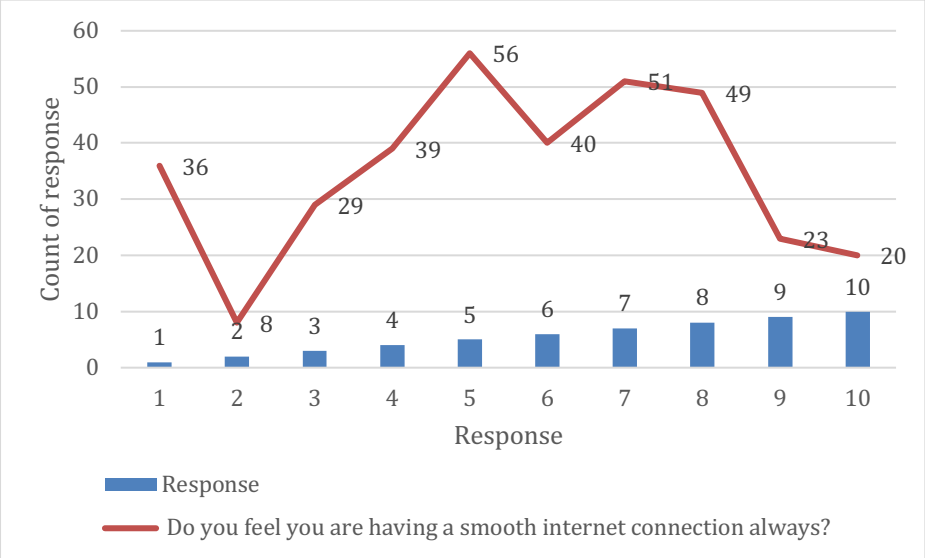


Table 5
Internet Connectivity Scenario

Do you feel you are having a smooth internet connection always?	
Mean	5.62
Standard Error	0.13
Median	6.00
Mode	5.00
Standard Deviation	2.52
Sample Variance	6.35
Kurtosis	-0.76
Skewness	-0.22

Figure 2 and Table 5 provide graphical and statistical analysis respectively of internet connectivity of various respondents. India, with over 687 million internet users in January, is the second biggest online market in the world, ranking only below China and the rate of internet penetration was about 50% in 2020, despite the huge base of internet subscribers (*Internet Usage in India - Statistics & Facts | Statista*, n.d.).

Question 8: Do you have more parallel data users on the same network? (Like siblings studying from home or parents working from home)?

Analysis showed that around 59.3% of respondents have their data in sharing while the remaining 40.7% did not.

Section B: Time Management

Question 1: How long do your official online sessions last?

Analysis shows that sessions last for about 4-5 hours in 32.8% cases, 5-6 hours in 27.4% cases, 2-3 hours in 21.7% cases and 4-5 hours in 18.2% cases. The majority of the student workload is text-based, and there is a lack of practical learning experience. It is said that the maximum concentration ability of a student while learning is 45-50 minutes. Online classes being continuous gives fewer breaks. Hence it is quite possible that your active learning pace will be decreased and you will develop partial listening resulting in slipping out some important details.

Question 2: Does the online mode of study create unwanted stress?

Figure 3
Graph of Unwanted Stress Levels Observed in Students

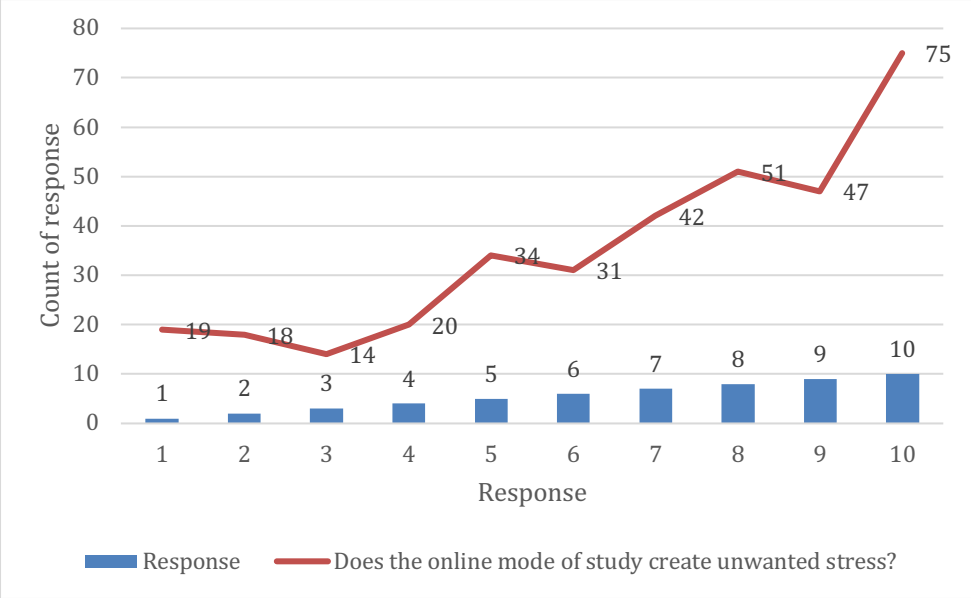


Table 6
Information Regarding Stress

Does the online mode of study create unwanted stress?	
Mean	6.86
Standard Error	0.15
Median	7.00
Mode	10.00
Standard Deviation	2.73
Sample Variance	7.46
Kurtosis	-0.64
Skewness	-0.64

Figure 3 and Table 6, as shown, provide details about unwanted stress due to online learning. COVID-19 may have several psychological effects on university students, which can convey anxiety. This stress may have adverse effects on a student's academic and psychological well-being, maybe more than anxiety and tension, the rapid online transformation to remote education has revealed much about higher education sector shortcomings and maybe a lot about what needs to be changed in universities. If a student is anxious or frustrated, it affects their mental acuity in class or while learning. Stress can lead to students dropping out of school or avoiding classes.

Question 3: Do you believe you have extra time now due to online studies?

The study found that about 54.7% of students agreed with the question which might be associated with the time saved during commuting from campus to home, reduction in lecture hours by the faculties, considering the pandemic situation and psychological stress while a remaining 45.3% omitted a response. It is suggested that there will be less time for recreational activities. This can lead to the procrastination of studies and regular academic tasks. It is human nature and behaviour to withdraw for a certain period. It will take more effort and determination to fill the gap of your lacking knowledge on the subject matter. If time management is handled, it leads to more productive use of the hours in a day.

Question 4: In this additional time that you have been able to obtain, did you attend any extra courses?
The study showed that about 70.4% of students did not attend any extra course, which might be due to various psychological stresses and other household problems, whereas 29.6% of students learnt new things apart from their regular studies. It is evident that recreation time also leads to productivity by helping the brain function better. If apart from learning, online classes have provided something better, then this has been linked to freedom and flexibility. Hence it may happen that the time one thought one would have spent learning some extra course might have gone into procrastination or distraction or mastering some hobby.

Question 5: Did this allow you to participate in any additional Webinars, Competitions, Learning Sessions, and so forth?

Results revealed that 65.8% of students participated in various webinars, competitions, learning sessions, and so on. whereas the remaining 34.2% did not. Extracurricular events are optional activities that stimulate physical or mental structures. The webinars, conferences and learning sessions not only boost the motivational drive-in academic study but also helped students in developing a more professional attitude. The competition may students understand where they stand and how they can improvise their skill sets. Online classes are easily adaptable and accessible.

Question 6: Do you believe that the online mode is far more comfortable than the offline mode?

From the study, 76.9% of students reported that online is not more comfortable than the offline mode of learning. This could be on account of poor ergonomics: students are not bound to practice positive ergonomics at home, as opposed to schools. One of the most common causes for the recent increase in back pain or fibromyalgia are online courses in beds and sofas. Additionally, online dependence on screens may cause eye-related problems too.
Whereas 23.1% of students found online learning to be more comfortable than offline due to geographic flexibility, the comfort of home, self-paced learning options, learning flexibility, and so on. The environment provided for academics still may lack the feel of the learning experience. Students may feel detached not only from the curriculum but from the institution in general.

Section C: Understanding of the Course Content

Figure 4

Graphical Analysis of Section C: Understanding of the Course Content

Table 7

Mathematical Analysis of Section C: Understanding of the Course Content

Question	Mean	Standard Error	Median	Mode	Standard deviation	Sample variance	Kurtosis	Skewness
1	4.38	0.14	4.00	1.00	2.71	7.33	-0.85	0.36
2	5.30	0.14	5.00	5.00	2.69	7.24	-0.96	0.06
3	5.10	0.14	5.00	5.00	2.70	7.29	-0.97	0.05
4	5.47	0.15	6.00	5.00	2.78	7.75	-1.02	-0.07
5	7.44	0.12	8.00	10.00	2.32	5.37	0.09	-0.84

Question 1: Are you able to understand the mathematical derivations or concept via an online platform?

Figure 4 and table 7 gives graphical and mathematical explanations respectively on students' understanding of various concepts and mathematical proofs via the online platform of learning. This suggests that this is the maximum that students are unable to understand mathematical derivations or concepts. This is because of the lack of writing practice. Studies show that students are directly wired to enhanced performance and good grades via practice (Beesley, Andrea D., Ed.; Apthorp, Helen S., 2010). It reflects the encoding properties of visual-motor information as repeated writing has enhanced the free recall of the text (Arbuthnott, 2005).

Question 2: In case of a doubt that you may have, are you able to clarify the same using the online mode of teaching?

Figure 4 and Table 7 provides data on the participation of students in the teaching-learning process. The study indicates that a particular community dominates the online dialogue and so manipulates newcomers (Piccoli et al., 2001).

Question 3: Are teachers able to deliver the contents as effectively as in the offline mode?

Figure 4 and Table 7 provide graphical and mathematical analysis respectively of the effectiveness of content delivery by teachers in the online mode as compared with the offline mode. Teachers are expected to enhance the learning process of reluctant students and engage them using motivational skills. There may be achievement gaps in students' academic records and hence constructive criticism can be provided in case the curriculum is poorly delivered.

Question 4: Are you able to absorb and retain the same amount of information as before or are you distracted by other online options like news, chats, games, and so forth?

Figure 4 and Table 7 provides graphical and mathematical analysis respectively regarding information absorbed or retained by students. Studying the focus habits and learnings of online learners using eye motion technologies have been carried out for an observational review of online learning processes (Mu et al., 2019). In face-to-face environments, professors usually depend on their concentration to perceive and react openly to student behaviours whereas teachers can only view the head and shoulders of a pupil in an online environment, which restricts available detail. However, students may be distracted from online studies and tend to open the notifications popping up in their devices, usually from social media.

Question 5: Do you require extra/additional video, presentation slides, support materials apart from what is distributed by your subject teacher for sufficient understanding of the content delivered?

Figure 4 and Table 7 provides graphical and mathematical analysis respectively on the need for extra sources to understand the topic properly.

Question 6: Does the lack of face-to-face interaction create a roadblock in the online learning mode?

The study reveals how students perceived interaction with their faculties. Around 75.5% of students faced difficulty and considered this as a roadblock whereas the remaining 24.5% of students did not face any difficulty. Interaction enabled people to exchange ideas, gain input and assess success more easily. Timely input and contact with the teacher can help students feel appreciated and provide the knowledge they need more quickly. Lack of immediate responses to the questions was also found to be a problem in online learning.

Section D: Assignments and Submissions

Question 1: Does the online mode of teaching create ease with completing assignments?

Figure 5
Graphical Analysis of Section D: Assignments and Submissions

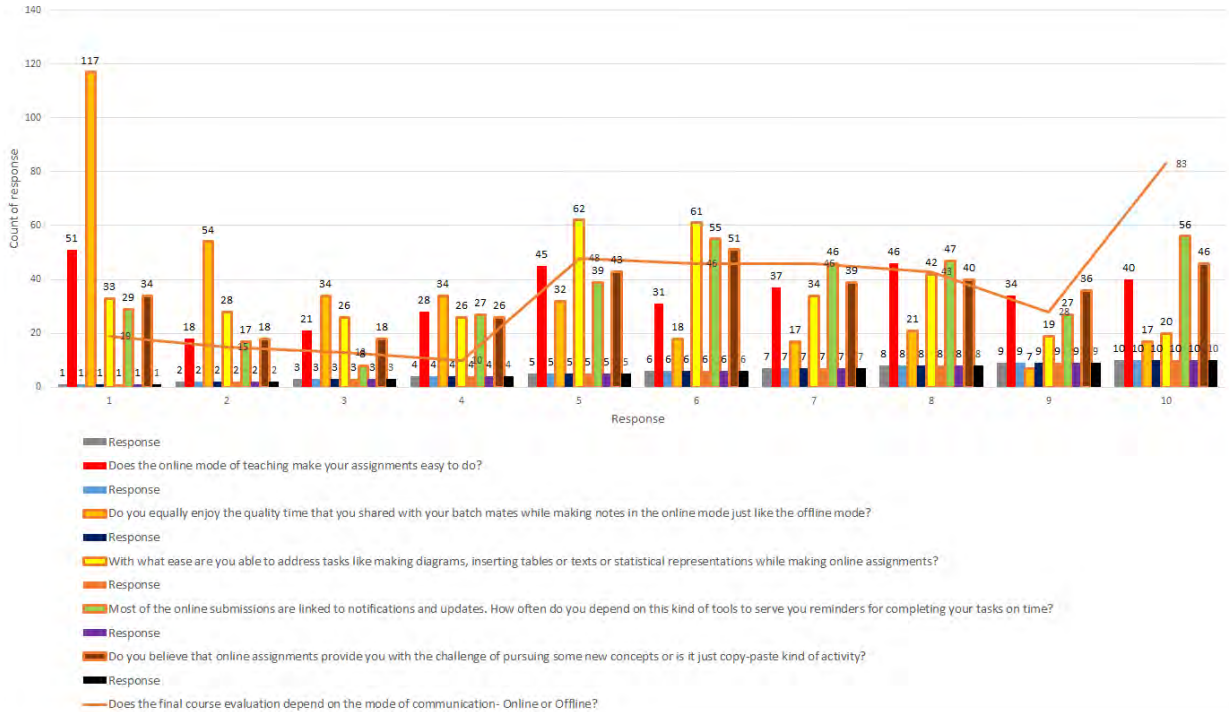


Table 8
Mathematical Analysis of Section D: Assignments and Submissions

Question	Mean	Standard Error	Median	Mode	Standard deviation	Sample variance	Kurtosis	Skewness
1	5.72	0.16	6.00	1.00	2.95	8.71	-1.15	-0.21
2	3.56	0.15	3.00	1.00	2.73	7.48	-0.32	0.89
3	5.39	0.13	6.00	5.00	2.53	6.39	-0.79	-0.10
4	6.33	0.14	7.00	10.00	2.70	7.29	-0.67	-0.43
5	6.06	0.15	6.00	6.00	2.78	7.73	-0.90	-0.31
6	6.81	0.14	7.00	10.00	2.66	7.10	-0.55	-0.55

Figure 5 and Table 8 gives graphical and mathematical analysis respectively on ease of solving assignments. There are mixed opinions from the student's side. The reason for the negative response might be due to a rise in the count of assignments in the online mode as compared to the offline mode by the teachers. Hence increased assignments result in writing, and solving more challenges that require more researching of things. On a positive note, students found it satisfactory to complete assignments, as this made them learn concepts more deeply and regular assessment made them pick up and improve their mistakes.

Question 2: Do you equally enjoy the quality time that you shared with your peers while making notes in the online mode just like the offline mode?

Figure 5 and Table 8 provide graphical and mathematical analysis respectively, which reveals that students lacked or did not enjoy quality time during the online mode of study. Students must use technology to help these peer-related relationships and social presence to learn

effectively. Education researchers have argued that social participation is essential to facilitate the development of a common educational atmosphere.

Question 3: How easily are you able to address tasks like drawing diagrams, inserting tables or texts or statistical representations while completing online assignments?

Figure 5 and Table 8 gives graphical and mathematical analysis respectively, giving information about the ease with which students can address tasks like making diagrams, inserting tables or texts or statistical representations while making online assignments.

Question 4: Most of the online submissions are linked to notifications and updates. How often do you depend on this kind of tool to provide reminders for completing your tasks on time?

Figure 5 and Table 8 provides graphical and mathematical analysis respectively about student's dependency on various reminding apps or software or app notification for completing their tasks.

Question 5: Do you believe that online assignments provide you with the challenge of pursuing some new concept or is it a passive activity?

Figure 5 and Table 8 gives graphical and mathematical analysis respectively which shows the actual effectiveness of assignments in their studies. Analysis shows how students feel about assignments provided to them i.e. whether they are helping them build up concepts and provide a challenge to them to learn new things or is it just copying tasks from the internet. Students appear to copy material from available sources, leading to a decrease in their creativity. The assignments, when provided in form of application-based questions, require greater higher-order thinking. When a given assignment challenges a student, they appear interested and motivated to pursue these on their own. This can help in exploring the new direction in academic study and provide a sense of achievement.

Question 6: Does the final course evaluation depend on the mode of communication- Online or Offline?

Figure 5 and Table 8 gives graphical and mathematical analysis respectively giving information about the final course analysis.

Section E: Ease and Comfort of Study

Question 1: Do you have the option to access your session contents at your convenience?

The study reveals that 53.9% did not have access to session content later on. Students fail to utilize the technology in general cases and when they do not, the aptness of technology to gain access is overpowered by the non-fulfilment of the purpose for which it was originally designed, whereas 40.7% of students had access to the content as per the convenience. Online videos provide easy access to the content of the courses in support of the online distribution system and are flexible to check content multiple times as required.

Question 2: Do you believe that the course contents delivered via online mode are far more organized and streamlined as compared to the offline mode of teaching?

The study considered whether student's perceived that course content delivery was more organized and streamlined in the online platform, as compared to offline. A total of 67.5% of students did not find that online learning was the more organized form for content delivery since the connectivity may be lacking, the students and faculty were not in proper contact, unable to get the proper link to join the session whereas the others (32.5%) found online to be better in these terms, who might be those who were able to access and join the content or session properly or would may have received the session joining information in a better way.

Question 3: Do you believe that online courses are more expensive in terms of money, energy and effort as compared to offline courses?

A total of 51.3% found online platforms a better choice comparatively since money could be saved by avoiding transportation facilities, and rental facilities. The remaining 48.7% found offline platforms better as they felt more money was required to be invested to attend online sessions as fast internet connections are required to access them.

Question 4: In case you get a chance to decide which mode is to be used for further communication, would you opt for an online mode of study?

This aspect shows the choice of students to prefer a further learning process after the pandemic passes with 72.4% of students preferring to avoid the online platform and 27.6% wishing to continue.

Question 5: Do you believe that the online mode of study has brought about a paradigm shift in the way people visualize the effectiveness of online tools in delivering content?

The sudden transformation from traditional learning to virtual learning has dramatically altered the student approach. A total of 64.1% agreed with the statement whereas the remaining 35.9% disagreed.

Section F: Skill Development and Motivation

Question 1: Do you support the fact that online learning has enhanced your computer and Internet-related skills to a large level?

This question considers whether students were able to develop computer and internet related skills due to this shift of learning platform. A total of 71.5% of students agreed and were able to develop their skills whereas the remaining 28.5% did not. Online learning is vital for the experience and comprehension of a student in the world of the internet. Individuals experiences and advanced technical capabilities lead to the development of reasoning skills. It further consists of patterns of intellectual thought process which are important factors in the progress of students in an informatics world.

Question 2: Do you agree that online learning has led to a drastic reduction in the development of interpersonal skills amongst individuals?

This question provides information about student opinions on the reduction in the development of interpersonal skills due to participation in the online mode of learning. In the context of this, 74.9% agreed that they were not able to effectively develop interpersonal skills. Reduced physical activities, community collaborations and organizational skills caused social isolation.

Whereas 25.1% disagreed with this which might be due to the student's involvement in various extracurricular activities including online competitions, MOOC courses, webinars, and so on.

Question 3: Do you believe skipping sessions is more prevalent in the online mode comparatively?

This question provides comparative data on how many students skipped sessions in the online mode. A total of 66.7% opted to skip the sessions whereas 33.3% did not skip them. The reason behind skipping could be barriers like unequal level of infrastructure, lack of internet connectivity, lack of devices for attending sessions, flagging motivation and adult monitoring in particular. Thus, their motivational drive was reduced with regard to attending classes. Excuses build up from challenges of physical and mental wellbeing to the lagging and poor network connection.

Figure 6
Graphical Analysis of Section F: Skill Development and Motivation

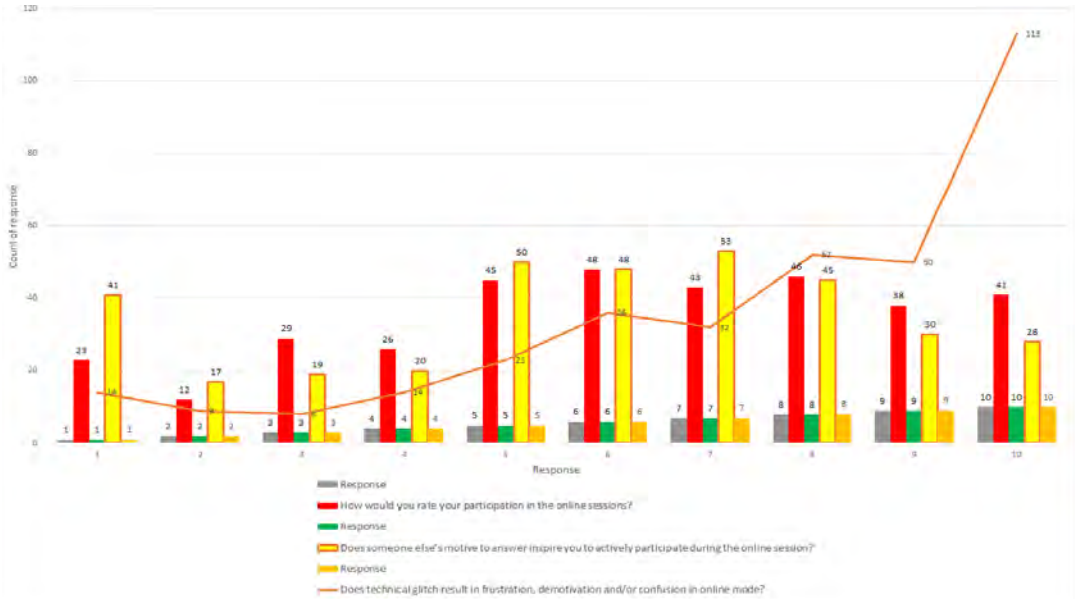


Table 9
Mathematical Analysis of Section F: Skill Development and Motivation

Question	Mean	Standard Error	Median	Mode	Standard deviation	Sample variance	Kurtosis	Skewness
4	6.19	0.14	6.00	6.00	2.61	6.83	-0.81	-0.32
5	5.79	0.14	6.00	7.00	2.69	7.24	-0.83	-0.34
6	7.59	0.14	8.00	10.00	2.54	6.45	0.20	-1.02

Question 4: How would you rate your participation in the online sessions?

Figure 6 and Table 9 provide graphical and mathematical analysis respectively on student's participation in online learning sessions. The participatory habits for learners online are affected by technology and interface features, subject field knowledge, student roles and

assignments, and an overload of details. The participation of learners is an integral factor for active and comprehensive preparation.

Question 5: Does someone else's motive to answer inspire you to actively participate during an online session?

Figure 6 and Table 9 provides graphical and mathematical analysis respectively with regard to collected responses.

Question 6: Does a technical glitch result in frustration, demotivation and/or confusion in online mode?

Figure 6 and Table 9 provide graphical and mathematical analysis respectively on student responses to technical glitches. Users may encounter several technological problems that impede and delay the process of teaching.

Section G: Course Satisfaction and Conclusion

Figure 7
Graphical Analysis of Section G: Course Satisfaction and Conclusion

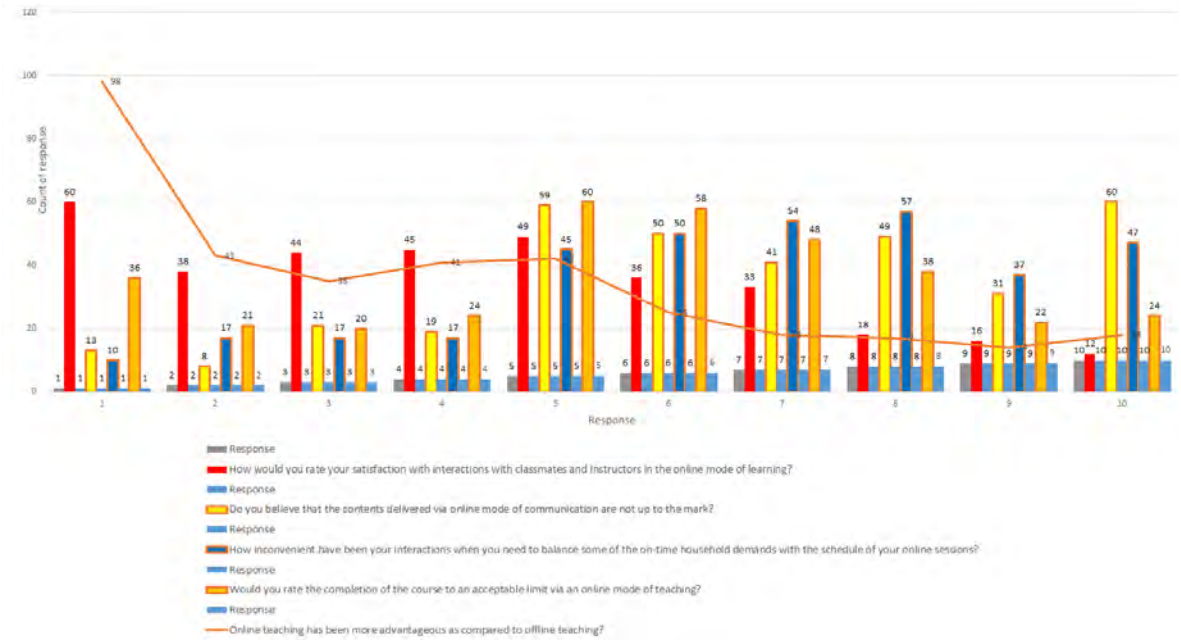


Table 10
Mathematical Analysis of Section G: Course Satisfaction and Conclusion

Question	Mean	Standard Error	Median	Mode	Standard deviation	Sample variance	Kurtosis	Skewness
1	4.41	0.14	4.00	1.00	2.56	6.53	-0.77	0.37
2	6.61	0.13	7.00	10.00	2.46	6.06	-0.61	-0.34
3	6.62	0.13	7.00	8.00	2.40	5.77	-0.46	-0.48
4	5.58	0.14	6.00	5.00	2.56	6.55	-0.72	-0.22
5	3.93	0.15	3.00	1.00	2.76	7.60	-0.60	0.68

Question: How would you rate your satisfaction with interactions with classmates and instructors in the online mode of learning?

Figure 7 and Table 10 provides graphical and mathematical analysis respectively on student's satisfaction with interaction with classmates and instructors in the online mode of learning. Interactions and mediation with peers and the teacher can be quite burdensome in an online learning setting. Due to a lack of face-to-face interactions, the institutions and organizations are inclined towards the fresh technologies, which enhance communication and makes functioning efficient. As a result, there have been reports of significant contact frequency during online courses.

Question: Do you believe that the learning content delivered via the online mode was acceptable?

Figure 7 and Table 10 provides graphical and mathematical analysis respectively on student opinions on content delivered during the online session. An efficient online class, therefore, relies on the organized content of the course.

Question: How inconvenient have been your interactions when you need to balance some of the on-time household demands with the schedule of your online sessions?

Figure 7 and Table 10 provides graphical and mathematical analysis respectively on student opinions regarding their interactions when they need to balance some of their on-time household demands with the schedule of their online sessions.

Question: Would you rate the completion of the course to an acceptable limit via an online mode of teaching?

Figure 7 and Table 10 provides graphical and mathematical analysis on course completion via the online platform.

Question 5: Has online teaching been more advantageous as compared to offline teaching? What according to you are the most important factors that contribute towards this choice?

Some of the advantages collected from the respondents included:

- Convenient to attend
- Timing is flexible
- Commuting/Transportation time saved
- Can access material and recorded lectures (if provided) in case of doubt.
- High affordability and accessibility
- Extra time for recreational activities
- Self-paced/ self- dependency approach
- Ensures safe and secure environment during the pandemic
- Reduction in cost
- Time management skills improved.
- Saves the energy of students.
- Improved self-discipline

Likewise, the disadvantages collected from respondents are:

- Partial understanding of the topics/concepts.
- Lack of focus/concentration/seriousness and sincerity.
- Minimum or no motivational drive for academic study.
- Losing interest in the online sessions.
- COVID-19 pandemic situation adds to the pressure and stress level of students.
- High levels of anxiety.
- Lack of participation, interaction, skill development.
- Not comfortable or used to the online learning approach.
- Posture related issues/eye strain
- No practical skill development.
- Poor audio/video quality leads to missing out on important concepts.
- House chores demand/disturbance/distraction.
- Delay in responses.
- Lack of sense of belonging or feelings of isolation.
- Virtual presence only or lack of social presence.

Conclusion

The existing system disparities and the need for free and low-cost Internet access for education have been highlighted by COVID-19. It is likely that content delivery methods should be improved through the streamlining of technology platforms. Even courses in various languages should be planned to expand their coverage for rural Indian youth and opportunities. Novel ways should be established to improve online learners' social skills. Several studies show that teacher contact with students has a major effect on student experiences of online study. Factors such as coherence in the design, the opportunity to interact in critical thought and information processing with course instructors, interactivity score on the online environment, opportunities for online learning for mentors and peers, academic self-concept as well as competencies necessary for technology use to keep up with curricula, universities and organizations switch to online sites. It was found that online learning was beneficial, as it provided students with accessibility and comfort. Students prefer organized material of videos that were posted to the websites of the institution. However, many students indicated that because of technical limitations, delayed input and failure of the instructor's handling of information and communication technologies, online classes could be more challenging than conventional classrooms. Thus, during an online course to allow the learner to be more efficient and profitable, these considerations should be borne in mind. Once the pandemic has ended, the growth of educational programs across online study support systems is likely but the preference remains for traditional courses. This report will also help to trigger innovation in higher education with regard to online components.

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